Appointment

From: Orme-Zavaleta, Jennifer [Orme-Zavaleta.Jennifer@epa.gov]
Sent: 9/4/2018 12:55:55 PM
To: Orme-Zavaleta, Jennifer [Orme-Zavaleta.Jennifer@epa.gov]; Rodan, Bruce [rodan.bruce@epa.gov]; Yamada, Richard (Yujiro) [yamada.richard@epa.gov]; Jones, Samantha [Jones.Samantha@epa.gov]; Bahadori, Tina [Bahadori.Tina@epa.gov]; Lambert, Jason [Lambert.Jason@epa.gov]; Owens, Beth [Owens.Beth@epa.gov]; Champlin, Anna [Champlin.Anna@epa.gov]; Mattas-Curry, Lahne [Mattas-Curry.Lahne@epa.gov]; Gillespie, Andrew [Gillespie.Andrew@epa.gov]; Thayer, Kris [thayer.kris@epa.gov]; Grevatt, Peter [Grevatt.Peter@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]; Breen, Barry [Breen.Barry@epa.gov]; Bodine, Susan [bodine.susan@epa.gov]; Beck, Nancy [Beck.Nancy@epa.gov]; Ross, Mary [Ross.Mary@epa.gov]; Ross, David P [ross.davidp@epa.gov]; Forsgren, Lee [Forsgren.Lee@epa.gov]; McDonough, Owen [mcdonough.owen@epa.gov]; Wildeman, Anna [wildeman.anna@epa.gov]; Nagle, Deborah [Nagle.Deborah@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Flaherty, Colleen [Flaherty.Colleen@epa.gov]; Henry, Tala [Henry.Tala@epa.gov]; Burneson, Eric [Burneson.Eric@epa.gov]; Holsinger, Hannah [Holsinger.Hannah@epa.gov]; Wadlington, Christina [Wadlington.Christina@epa.gov]; Drinkard, Andrea [Drinkard.Andrea@epa.gov]; Bertrand, Charlotte [Bertrand.Charlotte@epa.gov]; Baptist, Erik [Baptist.Erik@epa.gov]; Libelo, Laurence [Libelo.Laurence@epa.gov]
CC: Raffaele, Kathleen [raffaele.kathleen@epa.gov]; Foster, Stiven [Foster.Stiven@epa.gov]; Bartlett, Keith [Bartlett.Keith@epa.gov]; Emmerson, Caroline [Emmerson.Caroline@epa.gov]; Kelley, Rosemarie [Kelley.Rosemarie@epa.gov]; Sullivan, Greg [Sullivan.Greg@epa.gov]; Dombrowski, John [Dombrowski.John@epa.gov]; Anderson, Kate [Anderson.Kate@epa.gov]; Mackey, Cyndy [Mackey.Cyndy@epa.gov]; DeLeon, Rafael [Deleon.Rafael@epa.gov]; Hubbard, Carolyn [Hubbard.Carolyn@epa.gov]; Fitz-James, Schatzi [Fitz-James.Schatzi@epa.gov]; Gaines, Linda [Gaines.Linda@epa.gov]; Birchfield, Norman [Birchfield.Norman@epa.gov]; Mclain, Jennifer [Mclain.Jennifer@epa.gov]

Subject: GenX and PFBS Toxicity Values and roll-out plan
Location: DCRoomRRB41213/ORD; call-in: Ex. 6 Personal Privacy (PP)

Start: 9/13/2018 4:00:00 PM
End: 9/13/2018 5:00:00 PM
Show Time As: Tentative

Required Attendees: Orme-Zavaleta, Jennifer; Rodan, Bruce; Yamada, Richard (Yujiro); Jones, Samantha; Bahadori, Tina; Lambert, Jason; Owens, Beth; Champlin, Anna; Mattas-Curry, Lahne; Gillespie, Andrew; Thayer, Kris; Grevatt, Peter; Behl, Betsy; Strong, Jamie; Breen, Barry; Bodine, Susan; Beck, Nancy; Ross, Mary; Ross, David P; Forsgren, Lee; McDonough, Owen; Wildeman, Anna; Nagle, Deborah; Jacobs, Brittany; Miller, Gregory; Flaherty, Colleen; Henry, Tala; Burneson, Eric; Holsinger, Hannah; Wadlington, Christina; Drinkard, Andrea; Bertrand, Charlotte; Baptist, Erik; Libelo, Laurence
Optional Attendees: Raffaele, Kathleen; Foster, Stiven; Bartlett, Keith; Emmerson, Caroline; Kelley, Rosemarie; Sullivan, Greg; Dombrowski, John; Anderson, Kate; Mackey, Cyndy; DeLeon, Rafael; Hubbard, Carolyn; Fitz-James, Schatzi; Gaines, Linda; Birchfield, Norman; Mclain, Jennifer

Appointment

From: Owscheduling [Owscheduling@epa.gov]
Sent: 10/4/2019 1:57:36 PM
To: Ross, David P [ross.davidp@epa.gov]; Nagle, Deborah [Nagle.Deborah@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Bertrand, Charlotte [Bertrand.Charlotte@epa.gov]; Kramer, Jessica L. [kramer.jessical@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]
CC: Penman, Crystal [Penman.Crystal@epa.gov]

Subject: National Toxicology Program (NTP) Pathology Working Group report for GenX Chemicals
Attachments: MR_Ross_National Toxicology Program-Gen X2019-09-30-124406.pdf
Location: 3233 WJCE

Start: 11/6/2019 6:00:00 PM
End: 11/6/2019 7:00:00 PM
Show Time As: Tentative

Required Attendees: Ross, David P; Nagle, Deborah; Behl, Betsy; Bertrand, Charlotte; Kramer, Jessica L.; Jacobs, Brittany; Miller, Gregory; Strong, Jamie
Optional Attendees: Penman, Crystal

OST: Please save a local copy or print out before filling in. Submit to Michele Higgs.

Office of Water Meeting Request Form

Date Received in OW: _____

FOR: Dave Ross _x___ Lee Forsgren _____ Benita Best-Wong _____ Owen McDonough _____ Anna Wildeman_____

Subject: __National Toxicology Program (NTP) Pathology Working Group Report for GenX Chemicals _____

Meeting Requested By: ___Betsy Behl _____

Office Director Approval: _____ **Date:** 9/30/18

Date staff will be ready for this meeting by: ___Week of November 4th _____

Latest date meeting can happen by: _____Week of November 11th _____

Any hard deadlines affecting timeframe: _____

Time Needed for meeting: 20 Minutes _____ 45 Minutes ____ 1 Hour _x___ Other _____

Purpose of the meeting: ____Brief Dave Ross on the outcome of the NTP Pathologhy Working Group re-analysis of the GenX chemicals study slides _____

AA decision expected? Yes _____ No _x_____

Provide AA with information? Yes ___x__ No

What specifically is to be decided or presented? Why is a meeting needed?
IO requested a briefing after the NTP report was finalized and delivered to EPA.

Who will attend the meeting:
Mandatory Attendees (Give Full Names as listed in Outlook and Identify Office):
Deborah Nagle, Betsy Behl, Charlotte Bertrand, Jessica Kramer, Brittany Jacobs, Greg Miller, Jamie Strong

Optional Attendees (Give Full Names as listed in Outlook and Identify Office – please copy your own office's Special Assistant):

ED_006421_00000134-00001

Appointment

From: Owscheduling [Owscheduling@epa.gov]
Sent: 10/2/2019 5:07:57 PM
To: Owscheduling [Owscheduling@epa.gov]; Ross, David P [ross.davidp@epa.gov]; Nagle, Deborah [Nagle.Deborah@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Bertrand, Charlotte [Bertrand.Charlotte@epa.gov]; Kramer, Jessica L. [kramer.jessical@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]; Aguirre, Janita [Aguirre.Janita@epa.gov]; Weyer, Erica [weyer.erica@epa.gov]
CC: Penman, Crystal [Penman.Crystal@epa.gov]

Subject: National Toxicology Program (NTP) Pathology Working Group report for GenX Chemicals
Attachments: MR_Ross_National Toxicology Program-Gen X2019-09-30-124406.pdf
Location: 3233 WJCE

Start: 11/19/2019 3:00:00 PM
End: 11/19/2019 3:45:00 PM
Show Time As: Busy

Required Attendees: Ross, David P; Nagle, Deborah; Behl, Betsy; Bertrand, Charlotte; Kramer, Jessica L.; Jacobs, Brittany; Miller, Gregory; Strong, Jamie; Aguirre, Janita; Weyer, Erica
Optional Attendees: Penman, Crystal

Appointment

From: Penman, Crystal [Penman.Crystal@epa.gov]
Sent: 9/4/2018 3:40:00 PM
To: Forsgren, Lee [Forsgren.Lee@epa.gov]; McDonough, Owen [mcdonough.owen@epa.gov]; Wildeman, Anna [wildeman.anna@epa.gov]; Nagle, Deborah [Nagle.Deborah@epa.gov]; Grevatt, Peter [Grevatt.Peter@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Flaherty, Colleen [Flaherty.Colleen@epa.gov]; Henry, Tala [Henry.Tala@epa.gov]; Burneson, Eric [Burneson.Eric@epa.gov]; Holsinger, Hannah [Holsinger.Hannah@epa.gov]; Mclain, Jennifer [Mclain.Jennifer@epa.gov]; Wadlington, Christina [Wadlington.Christina@epa.gov]; Drinkard, Andrea [Drinkard.Andrea@epa.gov]; Beck, Nancy [Beck.Nancy@epa.gov]; Orme-Zavaleta, Jennifer [Orme-Zavaleta.Jennifer@epa.gov]; Bodine, Susan [bodine.susan@epa.gov]; Breen, Barry [Breen.Barry@epa.gov]; Bahadori, Tina [Bahadori.Tina@epa.gov]; Jones, Samantha [Jones.Samantha@epa.gov]
CC: Bertrand, Charlotte [Bertrand.Charlotte@epa.gov]; Baptist, Erik [Baptist.Erik@epa.gov]

Subject: Canceled: GenX toxicity Values Call in Ex. 6 Personal Privacy (PP)
Location: 3233 WJCE

Start: 9/10/2018 3:00:00 PM
End: 9/10/2018 3:45:00 PM
Show Time As: Free

Importance: High

Required Attendees: Forsgren, Lee; McDonough, Owen; Wildeman, Anna; Nagle, Deborah; Grevatt, Peter; Behl, Betsy; Strong, Jamie; Jacobs, Brittany; Miller, Gregory; Flaherty, Colleen; Henry, Tala; Burneson, Eric; Holsinger, Hannah; Mclain, Jennifer; Wadlington, Christina; Drinkard, Andrea; Beck, Nancy; Orme-Zavaleta, Jennifer; Bodine, Susan; Breen, Barry; Bahadori, Tina; Jones, Samantha
Optional Attendees: Bertrand, Charlotte; Baptist, Erik

Appointment

From: Owscheduling [Owscheduling@epa.gov]
Sent: 10/2/2019 5:07:57 PM
To: Owscheduling [Owscheduling@epa.gov]; Ross, David P [ross.davidp@epa.gov]; Nagle, Deborah [Nagle.Deborah@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Bertrand, Charlotte [Bertrand.Charlotte@epa.gov]; Kramer, Jessica L. [kramer.jessical@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]; Aguirre, Janita [Aguirre.Janita@epa.gov]; Weyer, Erica [weyer.erica@epa.gov]
CC: Penman, Crystal [Penman.Crystal@epa.gov]

Subject: National Toxicology Program (NTP) Pathology Working Group report for GenX Chemicals
Attachments: MR_Ross_National Toxicology Program-Gen X2019-09-30-124406.pdf
Location: 3233 WJCE

Start: 11/19/2019 4:00:00 PM
End: 11/19/2019 4:45:00 PM
Show Time As: Tentative

Required Attendees: Ross, David P; Nagle, Deborah; Behl, Betsy; Bertrand, Charlotte; Kramer, Jessica L.; Jacobs, Brittany; Miller, Gregory; Strong, Jamie; Aguirre, Janita; Weyer, Erica
Optional Attendees: Penman, Crystal

Appointment

From: Owscheduling [Owscheduling@epa.gov]
Sent: 10/16/2019 6:44:32 PM
To: Ross, David P [ross.davidp@epa.gov]; Nagle, Deborah [Nagle.Deborah@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Bertrand, Charlotte [Bertrand.Charlotte@epa.gov]; Kramer, Jessica L. [kramer.jessical@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]
CC: Penman, Crystal [Penman.Crystal@epa.gov]

Subject: National Toxicology Program (NTP) Pathology Working Group report for GenX Chemicals
Attachments: MR_Ross_National Toxicology Program-Gen X2019-09-30-124406.pdf
Location: DCRoomEast2369B/DC-ICC-OW-IO

Start: 11/6/2019 6:00:00 PM
End: 11/6/2019 7:00:00 PM
Show Time As: Tentative

Required Attendees: Ross, David P; Nagle, Deborah; Behl, Betsy; Bertrand, Charlotte; Kramer, Jessica L.; Jacobs, Brittany; Miller, Gregory; Strong, Jamie
Optional Attendees: Penman, Crystal

Appointment

From: Owscheduling [Owscheduling@epa.gov]
Sent: 10/2/2019 5:07:57 PM
To: Owscheduling [Owscheduling@epa.gov]; Ross, David P [ross.davidp@epa.gov]; Nagle, Deborah [Nagle.Deborah@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Bertrand, Charlotte [Bertrand.Charlotte@epa.gov]; Kramer, Jessica L. [kramer.jessical@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]; Aguirre, Janita [Aguirre.Janita@epa.gov]; Weyer, Erica [weyer.erica@epa.gov]
CC: Penman, Crystal [Penman.Crystal@epa.gov]

Subject: National Toxicology Program (NTP) Pathology Working Group report for GenX Chemicals
Attachments: MR_Ross_National Toxicology Program-Gen X2019-09-30-124406.pdf
Location: 3233 WJCE

Start: 11/19/2019 4:00:00 PM
End: 11/19/2019 4:45:00 PM
Show Time As: Tentative

Required Attendees: Ross, David P; Nagle, Deborah; Behl, Betsy; Bertrand, Charlotte; Kramer, Jessica L.; Jacobs, Brittany; Miller, Gregory; Strong, Jamie; Aguirre, Janita; Weyer, Erica
Optional Attendees: Penman, Crystal

Appointment

From: Gentry, Nathan [Gentry.Nathan@epa.gov]
Sent: 9/11/2018 7:20:19 PM
To: Rodan, Bruce [rodan.bruce@epa.gov]; Yamada, Richard (Yujiro) [yamada.richard@epa.gov]; Jones, Samantha [Jones.Samantha@epa.gov]; Bahadori, Tina [Bahadori.Tina@epa.gov]; Lambert, Jason [Lambert.Jason@epa.gov]; Owens, Beth [Owens.Beth@epa.gov]; Champlin, Anna [Champlin.Anna@epa.gov]; Mattas-Curry, Lahne [Mattas-Curry.Lahne@epa.gov]; Gillespie, Andrew [Gillespie.Andrew@epa.gov]; Thayer, Kris [thayer.kris@epa.gov]; Grevatt, Peter [Grevatt.Peter@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]; Breen, Barry [Breen.Barry@epa.gov]; Bodine, Susan [bodine.susan@epa.gov]; Beck, Nancy [Beck.Nancy@epa.gov]; Ross, Mary [Ross.Mary@epa.gov]; Ross, David P [ross.davidp@epa.gov]; Forsgren, Lee [Forsgren.Lee@epa.gov]; McDonough, Owen [mcdonough.owen@epa.gov]; Wildeman, Anna [wildeman.anna@epa.gov]; Nagle, Deborah [Nagle.Deborah@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Flaherty, Colleen [Flaherty.Colleen@epa.gov]; Henry, Tala [Henry.Tala@epa.gov]; Burneson, Eric [Burneson.Eric@epa.gov]; Holsinger, Hannah [Holsinger.Hannah@epa.gov]; Wadlington, Christina [Wadlington.Christina@epa.gov]; Drinkard, Andrea [Drinkard.Andrea@epa.gov]; Bertrand, Charlotte [Bertrand.Charlotte@epa.gov]; Baptist, Erik [Baptist.Erik@epa.gov]; Libelo, Laurence [Libelo.Laurence@epa.gov]
CC: Raffaele, Kathleen [raffaele.kathleen@epa.gov]; Foster, Stiven [Foster.Stiven@epa.gov]; Bartlett, Keith [Bartlett.Keith@epa.gov]; Emmerson, Caroline [Emmerson.Caroline@epa.gov]; Kelley, Rosemarie [Kelley.Rosemarie@epa.gov]; Sullivan, Greg [Sullivan.Greg@epa.gov]; Dombrowski, John [Dombrowski.John@epa.gov]; Anderson, Kate [Anderson.Kate@epa.gov]; Mackey, Cyndy [Mackey.Cyndy@epa.gov]; DeLeon, Rafael [Deleon.Rafael@epa.gov]

Subject: GenX and PFBS Toxicity Values and roll-out plan
Location: DCRoomRRB41213/ORD; call-in: Ex. 6 Personal Privacy (PP)

Start: 9/13/2018 4:00:00 PM
End: 9/13/2018 5:00:00 PM
Show Time As: Tentative

Required Attendees: Rodan, Bruce; Yamada, Richard (Yujiro); Jones, Samantha; Bahadori, Tina; Lambert, Jason; Owens, Beth; Champlin, Anna; Mattas-Curry, Lahne; Gillespie, Andrew; Thayer, Kris; Grevatt, Peter; Behl, Betsy; Strong, Jamie; Breen, Barry; Bodine, Susan; Beck, Nancy; Ross, Mary; Ross, David P; Forsgren, Lee; McDonough, Owen; Wildeman, Anna; Nagle, Deborah; Jacobs, Brittany; Miller, Gregory; Flaherty, Colleen; Henry, Tala; Burneson, Eric; Holsinger, Hannah; Wadlington, Christina; Drinkard, Andrea; Bertrand, Charlotte; Baptist, Erik; Libelo, Laurence
Optional Attendees: Raffaele, Kathleen; Foster, Stiven; Bartlett, Keith; Emmerson, Caroline; Kelley, Rosemarie; Sullivan, Greg; Dombrowski, John; Anderson, Kate; Mackey, Cyndy; DeLeon, Rafael

Appointment

From: Owscheduling [Owscheduling@epa.gov]
Sent: 10/2/2019 5:07:57 PM
To: Owscheduling [Owscheduling@epa.gov]; Ross, David P [ross.davidp@epa.gov]; Nagle, Deborah [Nagle.Deborah@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Bertrand, Charlotte [Bertrand.Charlotte@epa.gov]; Kramer, Jessica L. [kramer.jessical@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]; Aguirre, Janita [Aguirre.Janita@epa.gov]
CC: Penman, Crystal [Penman.Crystal@epa.gov]

Subject: National Toxicology Program (NTP) Pathology Working Group report for GenX Chemicals
Attachments: MR_Ross_National Toxicology Program-Gen X2019-09-30-124406.pdf
Location: 3233 WJCE

Start: 11/19/2019 3:00:00 PM
End: 11/19/2019 3:45:00 PM
Show Time As: Busy

Required Attendees: Ross, David P; Nagle, Deborah; Behl, Betsy; Bertrand, Charlotte; Kramer, Jessica L.; Jacobs, Brittany; Miller, Gregory; Strong, Jamie; Aguirre, Janita
Optional Attendees: Penman, Crystal

Appointment

From: Owscheduling [Owscheduling@epa.gov]
Sent: 10/18/2019 5:58:39 PM
To: Ross, David P [ross.davidp@epa.gov]; Nagle, Deborah [Nagle.Deborah@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Bertrand, Charlotte [Bertrand.Charlotte@epa.gov]; Kramer, Jessica L. [kramer.jessical@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]
CC: Penman, Crystal [Penman.Crystal@epa.gov]

Subject: National Toxicology Program (NTP) Pathology Working Group report for GenX Chemicals
Attachments: MR_Ross_National Toxicology Program-Gen X2019-09-30-124406.pdf
Location: DCRoomEast2369B/DC-ICC-OW-IO

Start: 11/6/2019 6:00:00 PM
End: 11/6/2019 6:45:00 PM
Show Time As: Tentative

Required Attendees: Ross, David P; Nagle, Deborah; Behl, Betsy; Bertrand, Charlotte; Kramer, Jessica L.; Jacobs, Brittany; Miller, Gregory; Strong, Jamie
Optional Attendees: Penman, Crystal

Appointment

From: Owscheduling [Owscheduling@epa.gov]
Sent: 11/1/2019 8:00:35 PM
To: Ross, David P [ross.davidp@epa.gov]; Nagle, Deborah [Nagle.Deborah@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Bertrand, Charlotte [Bertrand.Charlotte@epa.gov]; Kramer, Jessica L. [kramer.jessical@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]
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CC: Penman, Crystal [Penman.Crystal@epa.gov]; Penman, Crystal [Penman.Crystal@epa.gov]

Subject: National Toxicology Program (NTP) Pathology Working Group report for GenX Chemicals
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Location: 3233 WJCE

Start: 11/19/2019 4:00:00 PM
End: 11/19/2019 4:45:00 PM
Show Time As: Busy

Required Attendees: Ross, David P; Nagle, Deborah; Behl, Betsy; Bertrand, Charlotte; Kramer, Jessica L.; Jacobs, Brittany; Miller, Gregory; Strong, Jamie; Aguirre, Janita; Weyer, Erica
Optional Attendees: Penman, Crystal

Appointment

From: Owscheduling [Owscheduling@epa.gov]
Sent: 11/1/2019 8:01:20 PM
To: Ross, David P [ross.davidp@epa.gov]; Nagle, Deborah [Nagle.Deborah@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Bertrand, Charlotte [Bertrand.Charlotte@epa.gov]; Kramer, Jessica L. [kramer.jessical@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]
CC: Penman, Crystal [Penman.Crystal@epa.gov]

Subject: National Toxicology Program (NTP) Pathology Working Group report for GenX Chemicals
Attachments: MR_Ross_National Toxicology Program-Gen X2019-09-30-124406.pdf
Location: 3233 WJCE

Start: 11/19/2019 9:00:00 PM
End: 11/19/2019 9:45:00 PM
Show Time As: Tentative

Required Attendees: Ross, David P; Nagle, Deborah; Behl, Betsy; Bertrand, Charlotte; Kramer, Jessica L.; Jacobs, Brittany; Miller, Gregory; Strong, Jamie
Optional Attendees: Penman, Crystal

Appointment

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To: Owscheduling [Owscheduling@epa.gov]; Ross, David P [ross.davidp@epa.gov]; Nagle, Deborah [Nagle.Deborah@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Bertrand, Charlotte [Bertrand.Charlotte@epa.gov]; Kramer, Jessica L. [kramer.jessical@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]; Aguirre, Janita [Aguirre.Janita@epa.gov]; Weyer, Erica [weyer.erica@epa.gov]
CC: Penman, Crystal [Penman.Crystal@epa.gov]

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Optional Attendees: Penman, Crystal

Appointment

From: Owscheduling [Owscheduling@epa.gov]
Sent: 11/12/2019 5:02:38 PM
To: Ross, David P [ross.davidp@epa.gov]; Nagle, Deborah [Nagle.Deborah@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Bertrand, Charlotte [Bertrand.Charlotte@epa.gov]; Kramer, Jessica L. [kramer.jessical@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]
CC: Penman, Crystal [Penman.Crystal@epa.gov]

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Optional Attendees: Penman, Crystal

Appointment

From: Ross, David P [ross.davidp@epa.gov]
Sent: 8/20/2018 7:26:43 PM
To: Ross, David P [ross.davidp@epa.gov]; Forsgren, Lee [Forsgren.Lee@epa.gov]; McDonough, Owen [mcdonough.owen@epa.gov]; Wildeman, Anna [wildeman.anna@epa.gov]; Nagle, Deborah [Nagle.Deborah@epa.gov]; Grevatt, Peter [Grevatt.Peter@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Flaherty, Colleen [Flaherty.Colleen@epa.gov]; Henry, Tala [Henry.Tala@epa.gov]; Burneson, Eric [Burneson.Eric@epa.gov]; Holsinger, Hannah [Holsinger.Hannah@epa.gov]; Mclain, Jennifer [Mclain.Jennifer@epa.gov]; Wadlington, Christina [Wadlington.Christina@epa.gov]; Drinkard, Andrea [Drinkard.Andrea@epa.gov]; Beck, Nancy [Beck.Nancy@epa.gov]; Orme-Zavaleta, Jennifer [Orme-Zavaleta.Jennifer@epa.gov]; Bodine, Susan [bodine.susan@epa.gov]; Breen, Barry [Breen.Barry@epa.gov]; Bahadori, Tina [Bahadori.Tina@epa.gov]; Jones, Samantha [Jones.Samantha@epa.gov]
CC: Bertrand, Charlotte [Bertrand.Charlotte@epa.gov]; Baptist, Erik [Baptist.Erik@epa.gov]

Subject: Canceled: GenX toxicity Values Call in Ex. 6 Personal Privacy (PP)
Location: 3233 WJCE

Start: 9/10/2018 3:00:00 PM
End: 9/10/2018 3:45:00 PM
Show Time As: Free

Importance: High

Required Attendees: Forsgren, Lee; McDonough, Owen; Wildeman, Anna; Nagle, Deborah; Grevatt, Peter; Behl, Betsy; Strong, Jamie; Jacobs, Brittany; Miller, Gregory; Flaherty, Colleen; Henry, Tala; Burneson, Eric; Holsinger, Hannah; Mclain, Jennifer; Wadlington, Christina; Drinkard, Andrea; Beck, Nancy; Orme-Zavaleta, Jennifer; Bodine, Susan; Breen, Barry; Bahadori, Tina; Jones, Samantha
Optional Attendees: Bertrand, Charlotte; Baptist, Erik

Appointment

From: Jones, Samantha [Jones.Samantha@epa.gov]
Sent: 4/30/2018 5:32:59 PM
To: Jones, Samantha [Jones.Samantha@epa.gov]; Beck, Nancy [beck.nancy@epa.gov]; Bertrand, Charlotte [Bertrand.Charlotte@epa.gov]; Barone, Stan [Barone.Stan@epa.gov]; Henry, Tala [Henry.Tala@epa.gov]; Morris, Jeff [Morris.Jeff@epa.gov]; Keigwin, Richard [Keigwin.Richard@epa.gov]; Lowit, Anna [Lowit.Anna@epa.gov]; Hanley, Mary [Hanley.Mary@epa.gov]; Keller, Kaitlin [keller.kaitlin@epa.gov]; Layne, Arnold [Layne.Arnold@epa.gov]; Mottley, Tanya [Mottley.Tanya@epa.gov]; Hamernik, Karen [Hamernik.Karen@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Laessig, Susan [Laessig.Susan@epa.gov]; Raffaele, Kathleen [raffaele.kathleen@epa.gov]; Murphy, Deirdre [Murphy.Deirdre@epa.gov]; Vasu, Amy [Vasu.Amy@epa.gov]; Hoyer, Marion [hoyer.marion@epa.gov]; Axelrad, Daniel [Axelrad.Daniel@epa.gov]; Dzubow, Rebecca [Dzubow.Rebecca@epa.gov]; Euling, Susan [Euling.Susan@epa.gov]; Cassidy, Meghan [Cassidy.Meghan@epa.gov]; Olsen, Marian [Olsen.Marian@epa.gov]; Gehlhaus, Martin [Gehlhaus.Martin@epa.gov]; Pollard, Solomon [Pollard.Solomon@epa.gov]; Adams, Glenn [Adams.Glenn@epa.gov]; Mangino, Mario [mangino.mario@epa.gov]; Milburn, Anna [Milburn.Anna@epa.gov]; Schumacher, Kelly [Schumacher.Kelly@epa.gov]; Hiatt, Gerald [Hiatt.Gerald@epa.gov]; Kissinger, Lon [Kissinger.Lon@epa.gov]; Flowers, Lynn [Flowers.Lynn@epa.gov]; Benson, Bob [Benson.Bob@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Owens, Beth [Owens.Beth@epa.gov]; Lambert, Jason [Lambert.Jason@epa.gov]; Bahadori, Tina [Bahadori.Tina@epa.gov]; Lavoie, Emma [Lavoie.Emma@epa.gov]; Harper, Ashley [harper.ashley@epa.gov]; Champlin, Anna [Champlin.Anna@epa.gov]; Maddaloni, Mark [Maddaloni.Mark@epa.gov]; rogers, rick [rogers.rick@epa.gov]; Allenbach, Becky [Allenbach.Becky@epa.gov]; Harris, Kimberly [harris.kimberly@epa.gov]; Morton, Michael [Morton.Michael@epa.gov]; Shields, Amy [Shields.Amy@epa.gov]; Bahrman, Sarah [Bahrman.Sarah@epa.gov]; Small, Matthew [Small.Matthew@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; Gillespie, Andrew [Gillespie.Andrew@epa.gov]
CC: Cooperstein, Sharon [Cooperstein.Sharon@epa.gov]; Johnson, Ann [Johnson.Ann@epa.gov]; Metz, Chloe [Metz.Chloe@epa.gov]; Braverman, Carole [braverman.carole@epa.gov]; Davison, Jenny [davison.jenny@epa.gov]; Maurice, Charles [maurice.charles@epa.gov]; Mendez, Thomas [mendez.thomas@epa.gov]; Moore, Tammy [moore.tammy@epa.gov]; Newman, Erin [newman.erin@epa.gov]; Poleck, Thomas [poleck.thomas@epa.gov]; Prendiville, Timothy [prendiville.timothy@epa.gov]; Seely, David [seely.david@epa.gov]; Shoven, Heather [shoven.heather@epa.gov]; Valberg, Amelia [valberg.amelia@epa.gov]; Wilson, Jennifer [wilson.jenniferA@epa.gov]; Suero, Maryann [suero.maryann@epa.gov]; Miller, Amy [Miller.Amy@epa.gov]; Li, Corine [Li.Corine@epa.gov]; Holsinger, Hannah [Holsinger.Hannah@epa.gov]; Grevatt, Peter [Grevatt.Peter@epa.gov]; Mclain, Jennifer [Mclain.Jennifer@epa.gov]; Burneson, Eric [Burneson.Eric@epa.gov]; 'mmaddalo22[Ex. 6 Personal Privacy (PP)]; Allen, Elizabeth [allen.elizabeth@epa.gov]; Jankowski, Mark [jankowski.mark@epa.gov]; Repasky, Ted [repasky.ted@epa.gov]; Bachman, Brenda [bachman.brenda@epa.gov]; Thomas, Lee [Thomas.Lee@epa.gov]; Speth, Thomas [Speth.Thomas@epa.gov]; brendabachmar[Ex. 6 Personal Privacy (PP)]

Subject: FW: Overview of GenX and PFBS assessments - prior to internal review (NOTE: revised materials and Adobe Connect link added)
Location: AUDIO - Skype (link and # in body of invite); VIEWING OF SLIDES - Adobe Connect (link in body of invite)

Start: 5/1/2018 1:00:00 PM
End: 5/1/2018 2:00:00 PM
Show Time As: Busy

Appointment

From: Owscheduling [Owscheduling@epa.gov]
Sent: 10/2/2019 5:07:57 PM
To: Owscheduling [Owscheduling@epa.gov]; Ross, David P [ross.davidp@epa.gov]; Nagle, Deborah [Nagle.Deborah@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Bertrand, Charlotte [Bertrand.Charlotte@epa.gov]; Kramer, Jessica L. [kramer.jessical@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]
CC: Penman, Crystal [Penman.Crystal@epa.gov]

Subject: National Toxicology Program (NTP) Pathology Working Group report for GenX Chemicals
Attachments: MR_Ross_National Toxicology Program-Gen X2019-09-30-124406.pdf
Location: 3233 WJCE

Start: 11/6/2019 8:00:00 PM
End: 11/6/2019 9:00:00 PM
Show Time As: Busy

Required Attendees: Ross, David P; Nagle, Deborah; Behl, Betsy; Bertrand, Charlotte; Kramer, Jessica L.; Jacobs, Brittany; Miller, Gregory; Strong, Jamie
Optional Attendees: Penman, Crystal

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CC: Penman, Crystal [Penman.Crystal@epa.gov]

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Start: 11/6/2019 8:00:00 PM
End: 11/6/2019 9:00:00 PM
Show Time As: Tentative

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CC: Penman, Crystal [Penman.Crystal@epa.gov]

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Start: 11/6/2019 6:00:00 PM
End: 11/6/2019 7:00:00 PM
Show Time As: Busy

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Optional Attendees: Penman, Crystal

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CC: Penman, Crystal [Penman.Crystal@epa.gov]

Subject: National Toxicology Program (NTP) Pathology Working Group report for GenX Chemicals
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Location: 3233 WJCE

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End: 11/6/2019 7:00:00 PM
Show Time As: Tentative

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Optional Attendees: Penman, Crystal

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Optional Attendees: Penman, Crystal

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CC: Penman, Crystal [Penman.Crystal@epa.gov]

Subject: National Toxicology Program (NTP) Pathology Working Group report for GenX Chemicals
Attachments: MR_Ross_National Toxicology Program-Gen X2019-09-30-124406.pdf
Location: 3233 WJCE

Start: 11/19/2019 9:00:00 PM
End: 11/19/2019 9:45:00 PM
Show Time As: Busy

Required Attendees: Ross, David P; Nagle, Deborah; Behl, Betsy; Bertrand, Charlotte; Kramer, Jessica L.; Jacobs, Brittany; Miller, Gregory; Strong, Jamie
Optional Attendees: Penman, Crystal

Appointment

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Sent: 10/2/2019 5:07:57 PM
To: Owscheduling [Owscheduling@epa.gov]; Ross, David P [ross.davidp@epa.gov]; Nagle, Deborah [Nagle.Deborah@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Bertrand, Charlotte [Bertrand.Charlotte@epa.gov]; Kramer, Jessica L. [kramer.jessical@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]
CC: Penman, Crystal [Penman.Crystal@epa.gov]

Subject: National Toxicology Program (NTP) Pathology Working Group report for GenX Chemicals
Attachments: MR_Ross_National Toxicology Program-Gen X2019-09-30-124406.pdf
Location: DCRoomEast2369B/DC-ICC-OW-IO

Start: 11/6/2019 6:00:00 PM
End: 11/6/2019 7:00:00 PM
Show Time As: Busy

Required Attendees: Ross, David P; Nagle, Deborah; Behl, Betsy; Bertrand, Charlotte; Kramer, Jessica L.; Jacobs, Brittany; Miller, Gregory; Strong, Jamie
Optional Attendees: Penman, Crystal

Appointment

From: Owscheduling [Owscheduling@epa.gov]
Sent: 10/2/2019 5:07:57 PM
To: Owscheduling [Owscheduling@epa.gov]; Ross, David P [ross.davidp@epa.gov]; Nagle, Deborah [Nagle.Deborah@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Bertrand, Charlotte [Bertrand.Charlotte@epa.gov]; Kramer, Jessica L. [kramer.jessical@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]
CC: Penman, Crystal [Penman.Crystal@epa.gov]

Subject: National Toxicology Program (NTP) Pathology Working Group report for GenX Chemicals
Attachments: MR_Ross_National Toxicology Program-Gen X2019-09-30-124406.pdf
Location: DCRoomEast2369B/DC-ICC-OW-IO

Start: 11/6/2019 6:00:00 PM
End: 11/6/2019 6:45:00 PM
Show Time As: Busy

Required Attendees: Ross, David P; Nagle, Deborah; Behl, Betsy; Bertrand, Charlotte; Kramer, Jessica L.; Jacobs, Brittany; Miller, Gregory; Strong, Jamie
Optional Attendees: Penman, Crystal

Appointment

From: Owscheduling [Owscheduling@epa.gov]
Sent: 10/2/2019 5:07:57 PM
To: Owscheduling [Owscheduling@epa.gov]; Ross, David P [ross.davidp@epa.gov]; Nagle, Deborah [Nagle.Deborah@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Bertrand, Charlotte [Bertrand.Charlotte@epa.gov]; Kramer, Jessica L. [kramer.jessical@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]
CC: Penman, Crystal [Penman.Crystal@epa.gov]

Subject: National Toxicology Program (NTP) Pathology Working Group report for GenX Chemicals
Attachments: MR_Ross_National Toxicology Program-Gen X2019-09-30-124406.pdf
Location: 3233 WJCE

Start: 11/19/2019 9:00:00 PM
End: 11/19/2019 9:45:00 PM
Show Time As: Tentative

Required Attendees: Ross, David P; Nagle, Deborah; Behl, Betsy; Bertrand, Charlotte; Kramer, Jessica L.; Jacobs, Brittany; Miller, Gregory; Strong, Jamie
Optional Attendees: Penman, Crystal

Appointment

From: Owscheduling [Owscheduling@epa.gov]
Sent: 10/2/2019 5:07:57 PM
To: Owscheduling [Owscheduling@epa.gov]; Ross, David P [ross.davidp@epa.gov]; Nagle, Deborah [Nagle.Deborah@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Bertrand, Charlotte [Bertrand.Charlotte@epa.gov]; Kramer, Jessica L. [kramer.jessical@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]
CC: Penman, Crystal [Penman.Crystal@epa.gov]

Subject: National Toxicology Program (NTP) Pathology Working Group report for GenX Chemicals
Attachments: MR_Ross_National Toxicology Program-Gen X2019-09-30-124406.pdf
Location: DCRoomEast2369B/DC-ICC-OW-IO

Start: 11/6/2019 6:00:00 PM
End: 11/6/2019 6:45:00 PM
Show Time As: Tentative

Required Attendees: Ross, David P; Nagle, Deborah; Behl, Betsy; Bertrand, Charlotte; Kramer, Jessica L.; Jacobs, Brittany; Miller, Gregory; Strong, Jamie
Optional Attendees: Penman, Crystal

Appointment

From: Owscheduling [Owscheduling@epa.gov]
Sent: 10/2/2019 5:07:57 PM
To: Owscheduling [Owscheduling@epa.gov]; Ross, David P [ross.davidp@epa.gov]; Nagle, Deborah [Nagle.Deborah@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Bertrand, Charlotte [Bertrand.Charlotte@epa.gov]; Kramer, Jessica L. [kramer.jessical@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]
CC: Penman, Crystal [Penman.Crystal@epa.gov]

Subject: National Toxicology Program (NTP) Pathology Working Group report for GenX Chemicals
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Location: DCRoomEast2369B/DC-ICC-OW-IO

Start: 11/19/2019 8:00:00 PM
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Required Attendees: Ross, David P; Nagle, Deborah; Behl, Betsy; Bertrand, Charlotte; Kramer, Jessica L.; Jacobs, Brittany; Miller, Gregory; Strong, Jamie
Optional Attendees: Penman, Crystal

Appointment

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Sent: 10/2/2019 5:07:57 PM
To: Owscheduling [Owscheduling@epa.gov]; Ross, David P [ross.davidp@epa.gov]; Nagle, Deborah [Nagle.Deborah@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Bertrand, Charlotte [Bertrand.Charlotte@epa.gov]; Kramer, Jessica L. [kramer.jessical@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]
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Subject: National Toxicology Program (NTP) Pathology Working Group report for GenX Chemicals
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Required Attendees: Ross, David P; Nagle, Deborah; Behl, Betsy; Bertrand, Charlotte; Kramer, Jessica L.; Jacobs, Brittany; Miller, Gregory; Strong, Jamie
Optional Attendees: Penman, Crystal

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Location: 3233 WJCE

Start: 11/19/2019 3:00:00 PM
End: 11/19/2019 3:45:00 PM
Show Time As: Busy

Required Attendees: Ross, David P; Nagle, Deborah; Behl, Betsy; Bertrand, Charlotte; Kramer, Jessica L.; Jacobs, Brittany; Miller, Gregory; Strong, Jamie
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From: Owscheduling [Owscheduling@epa.gov]
Sent: 10/2/2019 5:07:57 PM
To: Owscheduling [Owscheduling@epa.gov]; Ross, David P [ross.davidp@epa.gov]; Nagle, Deborah [Nagle.Deborah@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Bertrand, Charlotte [Bertrand.Charlotte@epa.gov]; Kramer, Jessica L. [kramer.jessical@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]
CC: Penman, Crystal [Penman.Crystal@epa.gov]

Subject: National Toxicology Program (NTP) Pathology Working Group report for GenX Chemicals
Attachments: MR_Ross_National Toxicology Program-Gen X2019-09-30-124406.pdf
Location: 3233 WJCE

Start: 11/19/2019 3:00:00 PM
End: 11/19/2019 3:45:00 PM
Show Time As: Busy

Required Attendees: Ross, David P; Nagle, Deborah; Behl, Betsy; Bertrand, Charlotte; Kramer, Jessica L.; Jacobs, Brittany; Miller, Gregory; Strong, Jamie
Optional Attendees: Penman, Crystal

Appointment

From: Owscheduling [Owscheduling@epa.gov]
Sent: 10/2/2019 5:07:57 PM
To: Owscheduling [Owscheduling@epa.gov]; Ross, David P [ross.davidp@epa.gov]; Nagle, Deborah [Nagle.Deborah@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Bertrand, Charlotte [Bertrand.Charlotte@epa.gov]; Kramer, Jessica L. [kramer.jessical@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]
CC: Penman, Crystal [Penman.Crystal@epa.gov]

Subject: National Toxicology Program (NTP) Pathology Working Group report for GenX Chemicals
Attachments: MR_Ross_National Toxicology Program-Gen X2019-09-30-124406.pdf
Location: 3233 WJCE

Start: 11/19/2019 3:00:00 PM
End: 11/19/2019 3:45:00 PM
Show Time As: Tentative

Required Attendees: Ross, David P; Nagle, Deborah; Behl, Betsy; Bertrand, Charlotte; Kramer, Jessica L.; Jacobs, Brittany; Miller, Gregory; Strong, Jamie
Optional Attendees: Penman, Crystal

Appointment

From: Owscheduling [Owscheduling@epa.gov]
Sent: 10/2/2019 5:07:57 PM
To: Owscheduling [Owscheduling@epa.gov]; Ross, David P [ross.davidp@epa.gov]; Nagle, Deborah [Nagle.Deborah@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Bertrand, Charlotte [Bertrand.Charlotte@epa.gov]; Kramer, Jessica L. [kramer.jessical@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]
CC: Penman, Crystal [Penman.Crystal@epa.gov]

Subject: National Toxicology Program (NTP) Pathology Working Group report for GenX Chemicals
Attachments: MR_Ross_National Toxicology Program-Gen X2019-09-30-124406.pdf
Location: DCRoomEast2369B/DC-ICC-OW-IO

Start: 11/6/2019 6:00:00 PM
End: 11/6/2019 6:45:00 PM
Show Time As: Busy

Required Attendees: Ross, David P; Nagle, Deborah; Behl, Betsy; Bertrand, Charlotte; Kramer, Jessica L.; Jacobs, Brittany; Miller, Gregory; Strong, Jamie
Optional Attendees: Penman, Crystal

Appointment

From: Owscheduling [Owscheduling@epa.gov]
Sent: 10/2/2019 5:07:57 PM
To: Owscheduling [Owscheduling@epa.gov]; Ross, David P [ross.davidp@epa.gov]; Nagle, Deborah [Nagle.Deborah@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Bertrand, Charlotte [Bertrand.Charlotte@epa.gov]; Kramer, Jessica L. [kramer.jessical@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]
CC: Penman, Crystal [Penman.Crystal@epa.gov]

Subject: National Toxicology Program (NTP) Pathology Working Group report for GenX Chemicals
Attachments: MR_Ross_National Toxicology Program-Gen X2019-09-30-124406.pdf
Location: 3233 WJCE

Start: 11/19/2019 3:00:00 PM
End: 11/19/2019 3:45:00 PM
Show Time As: Tentative

Required Attendees: Ross, David P; Nagle, Deborah; Behl, Betsy; Bertrand, Charlotte; Kramer, Jessica L.; Jacobs, Brittany; Miller, Gregory; Strong, Jamie
Optional Attendees: Penman, Crystal

Message

From: Liguori, Krista [liguori.krista@epa.gov]
Sent: 5/7/2018 11:58:52 AM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]
Subject: GenX News Updates May 4th

Hi guys!

Here are last week's news updates on GenX ☺ Slow week!

PubMed & Google Scholar April 28 – May 4

1. None

Google News April 28 – May 4

1. State's GenX Testing Area Widens – May 4 – The Robesonian
    a. https://www.robesonian.com/features/health/110692/states-genx-testing-area-widens
2. County Releases Latest GenX Water Sample Test Results – May 1 – The Brunswick Beacon
    a. http://www.brunswickbeacon.com/content/county-releases-latest-genx-water-sample-test-results
3. Utility, UNCW Stand by GenX Contaminant Reports – May 3 – Coastal Review Online
    a. https://www.northcarolinahealthnews.org/2018/05/03/utility-uncw-stand-by-genx-contaminant-reports/
4. Time White: How to Fix GenX: get really angry – May 5 – The Fayetteville Observer
    a. http://www.fayobserver.com/opinion/20180505/tim-white-how-to-fix-genx-get-really-angry
5. Lisa Sorg: GOP Lawmakers Don't want to hear Bad News about GenX – May 6 – News & Record
    a. http://www.greensboro.com/townnews/politics/lisa-sorg-gop-lawmakers-don-t-want-to-hear-bad/article_6d462b47-f362-5e1e-8a3e-9d316acb9211.html

Krista Liguori, MSPH
ORISE Participant
US Environmental Protection Agency
Office of Water, Office of Science and Technology
Health and Ecological Criteria Division | Human Health Risk Assessment Branch

Message

From: Liguori, Krista [liguori.krista@epa.gov]
Sent: 5/11/2018 3:03:09 PM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]
Subject: GenX News Updates May 11th

Hello hello, here are this week's news updates on GenX.

PubMed & Google Scholar May 5- May 11:

1. none

Google News May 5 – May 11:

2. Our View: It's not just GenX, and it's massive – The Fayetteville Observer – May 8
   a. http://www.fayobserver.com/opinion/20180508/our-view-its-not-just-genx-and-its-massive
3. GenX among contaminants found in 2nd Robeson County well – The Robesonian – May 9
   a. https://www.robesonian.com/news/110955/genx-among-contaminants-found-in-2nd-robeson-county-well
4. Chemours to invest $100M in facility to reduce GenX emissions – WilmingtonBiz – May 9
   a. http://www.wilmingtonbiz.com/more_news/2018/05/09/chemours_to_invest_100m_in_facility_to_reduce_genx_emissions/17483
5. SELC, Cape Fear River Watch tell Chemours they're suing over GenX emissions – StarNews Online – May 7
   a. http://www.starnewsonline.com/news/20180507/selc-cape-fear-river-watch-tell-chemours-theyre-suing-over-genx-emissions
6. Collaboratory Studies: better GenX detection – Coastal Review Online – May 9
   a. https://www.coastalreview.org/2018/05/collaboratory-studies-better-genx-detection/
7. CFPUA plant upgrades mean GenX will soon start costing you money each month – Port City Daily – May 10
   a. https://portcitydaily.com/local-news/2018/05/10/cfpua-plant-upgrades-mean-genx-will-soon-start-costing-you-money-each-month/
8. CFPUA's board agrees to negotiate design contract for GenX filtration system – StarNews Online – May 9
   a. http://www.starnewsonline.com/entertainmentlife/20180509/cfpuas-board-agrees-to-negotiate-design-contract-for-genx-filtration-system
9. Editorial, Fayetteville Observer: Its not just GenX – and its massive – Starnews Online – May 11
   a. http://www.starnewsonline.com/opinion/20180511/editorial-fayetteville-observer-its-not-just--genx----and-its-massive
10. Other Opinions: don't let the pollution continue – Greensboro News & Record – May 11
    a. http://www.greensboro.com/opinion/columns/other-opinions-don-t-let-the-pollution-continue/article_17a53641-7faa-5c45-94cf-d2b30b619e51.html
11. Environmental lawyers take on DEQ, Chemours over GenX – Brinkwire – May 9
    a. http://en.brinkwire.com/319005/environmental-lawyers-take-on-deq-chemours-over-genx/
12. Cape Fear Reclassification concerns Mayor – Coastal Review Online – May 10
    a. https://www.coastalreview.org/2018/05/cape-fear-reclassification-concerns-mayor/
13. Chemours claims it will reduce airborne GenX emission by 99 percent – WECT
    a. http://www.wect.com/story/38143250/chemours-claims-it-will-reduce-airborne-genx-emission-by-99-percent
14. RiverKeeper Takes Level Action Against Fayetteville Plant – Spectrum News – May 7
    a. Three intent to sue notices from Southern Environmental Law Center over GenX release into air and found in rainwater.. 60 days notice to Chemours Fayetteville
    b. http://spectrumlocalnews.com/nc/coastal/news/2018/05/07/river-keeper-takes-legal-action-against-fayetteville-plant
15. Environmental Group calls for halt of GenX emissions – Fayettesville Observer – May 7
    a. http://www.fayobserver.com/news/20180507/environmental-group-calls-for-halt-of-genx-emissions

16. CFPUA looks at adding $46M filtration system on your dime, at first – WWAYTV3 – May 9
    a. https://www.wwaytv3.com/2018/05/09/cfpua-addresses-genx-and-other-recent-issues-with-the-water/

Have a good weekend!

Krista Liguori, MSPH
ORISE Participant
US Environmental Protection Agency
Office of Water, Office of Science and Technology
Health and Ecological Criteria Division | Human Health Risk Assessment Branch

Message

From: Liguori, Krista [liguori.krista@epa.gov]
Sent: 9/17/2018 12:50:44 PM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]
Subject: GenX News Updates Week September 8th - 14th

Hi all,

Here are last week's news updates on GenX:

Google Scholar / PubMed:
- none

Google News
- September 14
- September 13
- September 12
- September 11
    - Greensboro Tries to Curb Contaminants in it Water: http://www.wunc.org/post/greensboro-tries-curb-contaminants-its-water#stream/0
- September 10
    - Our View: Hope is not a plan for safe water in our homes: http://www.fayobserver.com/opinion/20180910/our-view-hope-is-not-plan-for-safe-water-in-our-homes
- September 9
    - Deafening economic results: https://www.independenttribune.com/opinion/deafening-economic-results/article_c6518ab8-b2da-11e8-8096-275cb2fb286d.html
- September 8
    - More compounds found in wells near Chemours: http://www.fayobserver.com/news/20180908/more-compounds-found-in-wells-near-chemours
    - Letters, Sept 9: http://www.starnewsonline.com/opinion/20180909/letters-sept-9-fonvielle-commission-got-monuments-issue-right
    - Chemours' Impact on Bladen's Economy: http://www.wilmingtonbiz.com/more_news/2018/09/07/chemours%E2%80%99_impact_on_bladen%E2%80%99s_economy/17933

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Message

From: Liguori, Krista [liguori.krista@epa.gov]
Sent: 7/6/2018 3:35:02 PM
To: Strong, Jamie [Strong.Jamie@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]
Subject: GenX News Updates July 6th

Hi all,

I fell behind on these for a few weeks, so here's a huge update on the news and publications surrounding GenX over the past several weeks:

GOOGLE SCHOLAR:

1) Per- and polyfluoroalkyl substances and fluorinated alternatives in urine and serum by on-line solid phase extraction–liquid chromatography–tandem mass spectrometry. Kato et al., October 2018: https://www.sciencedirect.com/science/article/pii/S0045653518311603

2) Estimating the number of airports potentially contaminated with perfluoroalkyl and polyfluoroalkyl substances from aqueous film forming foam: A Canadian example. Milley et al., September 2018: https://www.sciencedirect.com/science/article/pii/S030147971830553X

3) Recently Detected Drinking Water Contaminants: GenX and Other Per- and Polyfluoroalkyl Ether Acids. Hopkins et al., June 2018: https://awwa.onlinelibrary.wiley.com/doi/abs/10.1002/awwa.1073

4) Hepatotoxic Effects of Hexafluoropropylene Oxide Trimer Acid (HFPO-TA), A Novel Perfluorooctanoic Acid (PFOA) Alternative, on Mice. Sheng et al., June 2018: https://pubs.acs.org/doi/abs/10.1021/acs.est.8b01714

5) Predicting Relative Protein Affinity of Novel Per- and Polyfluoroalkyl Substances (PFASs) by An Efficient Molecular Dynamics Approach. Cheng and Ng, June 2018: https://pubs.acs.org/doi/abs/10.1021/acs.est.8b01268

6) Evaluation of a national data set for insights into sources, composition, and concentrations of per- and polyfluoroalkyl substances (PFASs) in U.S. drinking water. Guelfo and Adamson, May 2018: https://www.sciencedirect.com/science/article/pii/S0269749117343154

7) Impact of industrial waste water treatment plants on Dutch surface waters and drinking water sources. van Wezel et al., 2018: https://www.sciencedirect.com/science/article/pii/S0048969718319776

8) Comparing the toxic potency in vivo of long-chain perfluoroalkyl acids and fluorinated alternatives. Gomis et al., April 2018: https://www.sciencedirect.com/science/article/pii/S0160412017320020

9) Four Chemical Trends Will Shape the Next Decade's Directions in Perfluoroalkyl and Polyfluoroalkyl Substances Research. Kotthoff and Bucking. April 2018: https://www.frontiersin.org/articles/10.3389/fchem.2018.00103/full

10) Water Treatment Technologies for PFAS: The Next Generation. Horst et al., April 2018: https://onlinelibrary.wiley.com/doi/abs/10.1111/gwmr.12281

11) Contaminants of Emerging Concern. Cotruvo and Eaton. April 2018: https://awwa.onlinelibrary.wiley.com/doi/abs/10.1002/awwa.1057

12) Reductive Defluorination of Branched Per- and Polyfluoroalkyl Substances with Cobalt Complex Catalysts. Liu et al., March 2018: https://pubs.acs.org/doi/abs/10.1021/acs.estlett.8b00122

13) Per- and Polyfluoroalkyl Substances (PFASs) in Indoor Air and Dust from Homes and Various Microenvironments in China: Implications for Human Exposure. Yao et al., February 2018: https://pubs.acs.org/doi/abs/10.1021/acs.est.7b04971

14) Abstract from a talk at Clemson symposium: Occurrence and Control of Legacy and Emerging Perfluoroalkyl Substances in North Carolina. Sun et al., 2018: https://www.clemson.edu/cecas/departments/eees/symposium/programs/2018_CHS_program.pdf#page=46

PUBMED:

1. Validation of quantitative measurements and semi-quantitative estimates of emerging perfluoroethercarboxylic acids (PFECAs) and hexfluoroprolyene oxide acids (HFPOAs). McCord, Newton, Strynar, May 2018: https://www.sciencedirect.com/science/article/pii/S0021967318303625?via%3Dihub

2. Worldwide Distribution of Novel Perfluoroether Carboxylic and Sulfonic Acids in Surface Water. Pan et al., May 2018: https://pubs.acs.org/doi/10.1021/acs.est.8b00829

GOOGLE NEWS:

July 5th

- CFPUA receives $450,000 in state funds for GenX research and testing: https://portcitydaily.com/local-news/2018/07/05/cfpua-receives-450000-in-state-funds-for-genx-research-and-testing/
- GenX- An Interactive Timeline: https://www.northcarolinahealthnews.org/2018/07/05/genx-an-interactive-timeline/
- Municipal water not feasible for most homes with GenX, Chemours says: http://www.fayobserver.com/news/20180702/municipal-water-not-feasible-for-most-homes-with-genx-chemours-says

July 4th

- Chemours report recommends filters as long-term solution: https://www.bladenjournal.com/news/18933/chemours-report-recommends-filters-as-long-term-solution

June 30th

- Lawsuits enter GenX Saga: https://www.robesonian.com/news/112666/lawsuits-enter-genx-saga

June 27th

- GenX found in fish near Chemours plant: http://www.fayobserver.com/news/20180627/genx-found-in-fish-near-chemours-plant

June 23rd

- NC water tests show water filter removes GenX chemical: https://www.miamiherald.com/news/business/article213721624.html

June 22nd

- Filter systems removing GenX from contaminated water: http://www.fayobserver.com/news/20180622/filter-systems-removing-genx-from-contaminated-water

June 21st

- Federal report gains attention from CFPUA, law firm on local GenX issue: http://www.wilmingtonbiz.com/more_news/2018/06/21/federal_report_gains_attention_from_cfpua_law_firm_on_local_genx_issue/17646

June 20th

- EPA seeking peer review on GenX research: http://www.starnewsonline.com/news/20180618/epa-seeking-peer-review-on-genx-research
    - Brittany!!
- CFPUA reacts to new report suggested adverse health effects of compounds like genx: https://www.wwaytv3.com/2018/06/20/cfpua-reacts-to-new-report-suggested-adverse-health-effects-of-compounds-like-genx/

June 14th

- The GenX effect: Revelations stir more environmentalism: http://www.starnewsonline.com/news/20180614/genx-effect-revelations-stir-more-environmentalism

June 11th

- What's happened since we first learned of GenX a year ago? A lot.: http://www.starnewsonline.com/news/20180608/whats-happened-since-we-first-learned-of-genx-year-ago-lot
- DEQ calls on Chemours, court to ramp up GenX measures: https://www.wral.com/deq-calls-on-chemours-court-to-ramp-up-genx-measures/17619888/

June 7th

- After long silence, Chemours touts plan to cut GenX emissions: https://www.wral.com/after-long-silence-chemours-touts-plan-to-cut-genx-emissions/17609268/

Have a good weekend!

Krista Liguori, MSPH
ORISE Participant
US Environmental Protection Agency
Office of Water, Office of Science and Technology
Health and Ecological Criteria Division | Human Health Risk Assessment Branch

Message

From: Liguori, Krista [liguori.krista@epa.gov]
Sent: 3/16/2018 6:32:33 PM
To: Strong, Jamie [Strong.Jamie@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]
Subject: GenX news updates Week March 12-16
Attachments: Gomis_2018_toxicpotency_fluorinateds.pdf

Hi all,

Jamie asked me to send out GenX updates each week to you all. Here are the updates from a google news and pubmed search on GenX this week. Since this is the first week I started the search query I'm going to include relevant articles from the previous several weeks as well so they are not passed over.

PUBMED:

1. Comparing the toxic potency in vivo of long-chain perfluoroalkyl acids and fluorinated alternatives. Environment International. Gomis, et al. January 2018
    a. https://www.ncbi.nlm.nih.gov/pubmed/29421396 (attached)

GOOGLE NEWS (March 10th to 16th):

2. "Have we been eating GenX in our food for years?" Winston-Salem Journal
    a. http://www.journalnow.com/news/state_region/have-we-been-eating-genx-in-our-food-for-years/article_ebdb417a-90d2-5165-bdbb-5551e753701c.html
3. "Cumberland County wants help providing water to GenX contamination zone" Winston Salem Journal
    a. http://www.journalnow.com/news/state_region/cumberland-county-wants-help-providing-water-to-genx-contamination-zone/article_1a83f2b9-391c-524c-9472-25ce90932683.html
4. "Wilmington officials want GenX production shut down" North Carolina Public Radio
    a. http://wunc.org/post/wilmington-officials-want-genx-production-shut-down#stream/0
5. "Editorial: Is it time to close Chemours plant and end GenX?" The Times-News
    a. http://www.thetimesnews.com/opinion/20180312/editorial-is-it-time-to-close-chemours-plant-and-end-genx
6. "Latest results show lowest GenX levels in Brunswick Co. Since Testing Began" WECT
    a. http://www.wect.com/story/37733939/latest-results-show-lowest-genx-levels-in-brunswick-co-since-testing-began
7. "Editorial, Fayetteville Observer: More calls to stop GenX production" StarNews Online
    a. http://www.starnewsonline.com/opinion/20180316/editorial-fayetteville-observer-more-calls-to-stop-genx-production

Google News from recently before March 10th that I found interesting ☺

8. "Inside the Research Lab studying how GenX Impacts Oysters" WECT6
    a. http://www.wect.com/story/37621100/inside-the-research-lab-studying-how-genx-impacts-oysters
9. "Should you get a water treatment system in response to GenX?" StarNews Online
    a. http://www.starnewsonline.com/news/20180301/should-you-get-water-treatment-system-in-response-to-genx
10. "Rainwater samples show GenX is airborne" The Fayetteville Observer
    a. http://www.fayobserver.com/news/20180223/rainwater-samples-show-genx-is-airborne

Let me know what is helpful/not helpful for me to include!

Best,

Krista Liguori, MSPH
ORISE Participant
US Environmental Protection Agency
Office of Water, Office of Science and Technology
Health and Ecological Criteria Division | Human Health Risk Assessment Branch

Message

From: Liguori, Krista [liguori.krista@epa.gov]
Sent: 9/21/2018 6:46:39 PM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]
Subject: GenX news updates for September 15-21

Hi all,

Here are the news updates on GenX for the week of September 15-21st.

Google Scholar/ PubMed:

- Degradation of PFOA Substitute - GenX (HFPO-DA ammonium salt): Oxidation with UV/Persulfate or Reduction with UV/Sulfite?
    - https://pubs.acs.org/doi/abs/10.1021/acs.est.8b02172

Google News:

- Sept 21 – none
- Sept 20 – none
- Sept 19 – none
    - Perfluorinated chemicals as emerging environmental threats to kidney health: https://medicalresearch.com/author-interviews/perfluorinated-chemicals-as-emerging-environmental-threats-to-kidney-health/44627/
- Sept 18
    - Flooding causes a hog lagoon to breach; others are at capacity: https://www.heraldmailmedia.com/news/nation/flooding-causes-a-hog-lagoon-to-breach-others-are-at/article_109a67b2-02da-59f1-b0a1-75d7b655356f.html
    - Glass half-full on state solutions to chemicals in water: https://www.bna.com/eight-states-lead-n73014482593/
- Sept 17 – none
- Sept 16 – none
    - DEQ: Chemours says it shut down operations before Hurricane Florence; inspections to follow: https://pulse.ncpolicywatch.org/2018/09/16/deq-chemours-says-it-shut-down-operations-before-hurricane-florence-inspections-to-follow/
- Sept 15 & before
    - Congress pushes EPA on fluoropolymer water risks: http://www.rubbernews.com/article/20180912/NEWS/180919984/congress-pushes-epa-on-fluoropolymer-water-risks

Krista Liguori, MSPH
ORISE Participant
US Environmental Protection Agency
Office of Water, Office of Science and Technology
Health and Ecological Criteria Division | Human Health Risk Assessment Branch

Message

From: Liguori, Krista [liguori.krista@epa.gov]
Sent: 10/5/2018 4:45:42 PM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]
Subject: GenX News Updates September 29th - October 5th

Hi all,

Here are the news updates for GenX September 29th – October 5th.

Google Scholar / PubMed

- none

Google News

- October 5
- October 4
  - Hurricane recovery, school safety, GenX among issues discussed at candidates' forum: http://www.wect.com/2018/10/05/hurricane-recovery-school-safety-genx-among-issues-discussed-candidates-forum/
  - Dutch health institute outlines GenX efforts in REACH 2017 annual report: https://chemicalwatch.com/70797/dutch-health-institute-outlines-genx-efforts-in-reach-2017-annual-report
  - State board backs low threshold on GenX: https://hartsburgnews.com/state-board-backs-low-threshold-on-genx/118873/
  - The Federal Role in the Toxic PFAS Chemical Crisis: U.S. Senate Homeland Security and Governmental Affairs Committee Hearing: https://www.jdsupra.com/legalnews/the-federal-role-in-the-toxic-pfas-89437/
- October 3
  - Regulators prepare crackdown on air and water emissions of GenX: https://carolinapublicpress.org/28228/regulators-prepare-crackdown-on-air-and-water-emissions-of-genx/
  - PFAS symposium video available online: https://www.coastalreview.org/2018/10/pfas-symposium-video-available-online/
- October 2
  - Comment period extended to Oct 12 for draft GenX report: https://www.brunswickbeacon.com/content/comment-period-extended-oct-12-draft-genx-report
  - Draft GenX report open for public comment through Oct 12: https://mountainx.com/blogwire/draft-genx-report-open-for-public-comment-through-oct-12/
- October 1
  - More time allowed for GenX report input: https://www.coastalreview.org/2018/10/more-time-allowed-for-genx-report-input/
- September 30
- September 29

Message

From: Liguori, Krista [liguori.krista@epa.gov]
Sent: 10/12/2018 2:50:09 PM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]
Subject: GenX News Updates October 5-12

Hi all,

Here are the news updates for GenX from October 5 through 12th.

PubMed / Google Scholar
- None

Google News
- October 12
  - Membrane technology meetings held in Washington, DC: https://www.wateronline.com/doc/membrane-technology-meetings-held-in-washington-d-c-0001
    - "John Nichols, Brunswick County, NC Director of Utilities discussed GenX and other emerging contaminants in the Cape Fear and the utility's efforts to reduce them in the public water supplies"
- October 11
  - CFPUA schedules four community forums to discuss GenX, water filtration systems: http://www.wect.com/2018/10/11/cfpua-schedules-four-community-forums-discuss-genx-water-filtration-systems/
  - Our view: we still have big water problems: https://www.fayobserver.com/opinion/20181011/our-view-we-still-have-big-water-problems
- October 10
  - CFPUA moves forward with designing new system to filter out GenX and other compounds: https://www.wect.com/2018/10/10/cfpua-moves-forward-with-designing-new-system-filter-out-genx-other-compounds/
  - CFPUA forges ahead with GenX solutions: https://www.starnewsonline.com/news/20181010/cfpua-forges-ahead-with-genx-solutions
- October 8
  - Regulators prepare crackdown on air and water emissions of GenX: https://www.northcarolinahealthnews.org/2018/10/08/regulators-prepare-crackdown-dupont-chemours-genx/
- October 7
  - Schools, taxes, pollution among NC House, Senate candidate forum issues: https://www.fayobserver.com/news/20181007/schools-taxes-pollution-among-nc-house-senate-candidate-forum-issues
  - In state, drinking water in tests below EPA limit for 14 chemicals: https://www.arkansasonline.com/news/2018/oct/07/in-state-drinking-water-in-tests-ok-201/
  - Editorial: N.C. needs to take water issues seriously: http://www.thetimesnews.com/opinion/20181007/editorial-nc-needs-to-take-water-issues-seriously
- October 6
  - Nationwide class action lawsuit targets Dupont, Chemours, 3M, and other makes of PFAS chemicals: https://theintercept.com/2018/10/06/dupont-pfas-chemicals-lawsuit/

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Message

From: Liguori, Krista [liguori.krista@epa.gov]
Sent: 10/19/2018 5:25:33 PM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]
Subject: GenX News Updates for October 12-19th

Hi all,

Here are the news updates on GenX for October 12th through the 19th!

PubMed/ Google Scholar:

- Positive ionization and electron attachment of hexafluoropropylene oxide in different cluster environments: https://www.sciencedirect.com/science/article/pii/S1387380618303154

Google News

- October 19
  - GenX undetected in Bloodstreams of North Carolina Chemical Plant Neighbors: https://www.insurancejournal.com/news/southeast/2018/10/19/505077.htm
- October 18
  - DHHS Announces Results of Chemours Neighbors' Blood, Urine Tests: https://www.northcarolinahealthnews.org/2018/10/18/dhhs-announces-results-of-chemours-neighbors-blood-urine-tests/
  - Sludge from Chemours plant dumped in Sampson County landfill: https://www.fayobserver.com/news/20181018/sludge-from-chemours-plant-dumped-in-sampson-county-landfill
- October 17
  - City was proactive about contaminants: https://www.greensboro.com/opinion/letters_to_editor/city-was-proactive-about-contaminants/article_d2395061-52f7-56ea-b19c-526285e5dd4a.html
- October 16
  - Tests find man-made chemicals, but not GenX, in blood of residents near Chemours plant: https://www.wral.com/tests-find-pfas-but-not-genx-in-blood-near-chemours/17920408/
    - Tested for 17 PFAS, several were found but not GenX specifically.
- October 15
- October 14
- October 13
  - Documentary stirs up thoughts of GenX at Indigo Moon: https://www.fayobserver.com/news/20181013/documentary-stirs-up-thoughts-of-genx-at-indigo-moon
- October 12
  - Brunswick's $100-million treatment plant will concentrate contaminants, discharge them back into Cape Fear River: https://portcitydaily.com/local-news/2018/10/12/brunswicks-100-million-treatment-plant-will-concentrate-contaminants-discharge-them-back-into-cape-fear-river/
  - CFPUA announces public hearings for emerging-contaminants plan: https://portcitydaily.com/local-news/2018/10/11/cfpua-announces-public-hearings-for-emerging-contaminants-plan/
  - Class action lawsuit takes aim at US PFAS manufacturers: https://chemicalwatch.com/70961/class-action-lawsuit-takes-aim-at-us-pfas-manufacturers

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Message

From: Liguori, Krista [liguori.krista@epa.gov]
Sent: 7/13/2018 7:47:31 PM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]
Subject: GenX News Updates July 13

Hi all,

Here are the news updates on GenX for the week of July 9-13!

Google Scholar/PubMed

1. Chemours Memo—Proposed Drinking Water Health Advisory Value for GenX: https://www.chemours.com/Fayetteville-Works/en-us/assets/downloads/2018-04-shea-toxicology-analysis.pdf
    a. Dated April 2018 but first time I've seen this come up on Google.
2. Not too much going on this week in the news, so I looked into the REACH docs too.. I'm sure you guys have seen this, but here's from REACH updated on June 26th:
    a. https://echa.europa.eu/documents/10162/13641/rest_pfoa_final_bd_en.pdf/61e81035-e0c5-44f5-94c5-2f53554255a8
        i. Section C.3.1. talks about Human Health Risks of GenX

Google News

- July 13th
    - High concentrations chemicals around Dordrecht plant: https://nltimes.nl/2018/07/13/high-concentrations-chemicals-around-dordrecht-plant
        - " ditch water and collected rain water contain high concentrations of chemical substances PFOA or GenX chemicals in the water of 11 vegetable gardens in the area" final results of this study are expected in September.
    - Environmental groups sue to stop GenX emissions: https://www.wral.com/environmental-groups-sue-to-stop-genx-emissions/17696021/
    - Petition for Judicial Review is here: https://www.southernenvironment.org/uploads/words_docs/2018-07-13_-_Petition_for_Judicial_Review_-_New_Hanover_Sup_Crt.PDF
- July 12th
    - Cape Fear River Watch Files Lawsuit Against NCDEQ over GenX: http://www.wilmingtonbiz.com/nonprofit/2018/07/13/cape_fear_river_watch_files_lawsuit_against_ncdeq_over_genx/17735
- July 11th
    - CFPUA backs decision to continue business with carbon filter supplier despite controversy: https://www.wwaytv3.com/2018/07/11/cfpua-backs-decision-to-continue-business-with-carbon-filter-supplier-despite-controversy/
        - Calgon filter company bought by Kuraray America Company, which is located in same location as Chemours and Dupont at Fayetteville
        - "the site creates pollution and then sells you a product to clean it up"
    - Residents question effectiveness of water filter system: http://www.fayobserver.com/news/20180711/residents-question-effectiveness-of-water-filter-system
    - CFPUA buys water filters from Kuraray, the company dumping carcinogens that must be filtered: https://portcitydaily.com/local-news/2018/07/11/cfpua-buys-water-filters-from-kuraray-the-company-dumping-carcinogens-that-must-be-filtered/
- July 9th
    - Chemours Pushing Filters for Homes with GenX Tainted Wells - http://wunc.org/post/chemours-pushing-filters-homes-genx-tainted-wells#stream/0

- GenX: DEQ Public Comment Period on Chemours Order ends: http://whqr.org/post/genx-deq-public-comment-period-chemours-order-ends#stream/0

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Message

From: Liguori, Krista [liguori.krista@epa.gov]
Sent: 7/23/2018 12:22:30 PM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]
Subject: GenX News Updates July 20

Hi all,

Here are the news updates on GenX for last week!

PubMed / Google Scholar Updates July 14th-20th:

- none

Google News Updates July 14th-20th:

- July 20th
  - Local leaders send letter to Chemours; NHC commissioner Watkins 'sick and tired' of company's silence: http://www.wect.com/story/38687158/wilmington-mayor-nhc-board-of-commissioners-chair-send-letter-to-chemours
  - Wilmington, New Hanover officials ask Chemours to hold public meeting: http://www.starnewsonline.com/news/20180719/wilmington-new-hanover-officials-ask-chemours-to-hold-public-meeting
  - Officials seek meeting with Chemours: https://www.coastalreview.org/2018/07/officials-seek-meeting-with-chemours/
  - Chemours 'fix-it man' faces daunting task: https://www.coastalreview.org/2018/07/chemours-fix-it-man-faces-daunting-task/
- July 19th
  - Residents Hope Carbon Units can get Rid of GenX: http://spectrumlocalnews.com/nc/triangle-sandhills/news/2018/07/19/residents-hope-carbon-units-can-get-rid-of-genx
  - DEQ doesn't recommend carbon filters, says Chemours jumped the gun: https://www.bladenjournal.com/news/19109/deq-doesnt-recommend-carbon-filters-says-chemours-jumped-the-gun
  - Residents near Chemours plant will get blood test: https://www.northcarolinahealthnews.org/2018/07/19/residents-near-chemours-plant-will-get-blood-tested/
- July 18th
  - State not consulted before Chemours offered 'quick fix' to tainted well homeowners: https://www.wwaytv3.com/2018/07/18/state-not-consulted-before-chemours-offered-quick-fix-to-tainted-well-homeowners/
  - Chemours offers filters to owners of tainted water wells: http://wcti12.com/news/state-news/chemours-offers-filters-to-owners-of-tainted-water-wells
    - "will install and maintain granular activated carbon filtration systems at homes with levels above state's health goal"
- July 17th
  - Health officials to begin testing Chemours neighbors for GenX: https://www.wral.com/health-officials-to-begin-testing-chemours-neighbors-for-genx/17703707/
  - Residents' blood, urine to get tested for GenX: https://www.robesonian.com/news/113233/residents-blood-urine-to-get-tested-for-genx
- July 16th
  - Lawsuit filed to halt GenX emissions: https://www.coastalreview.org/2018/07/lawsuit-filed-to-halt-genx-emissions/

- July 14th
    - Residents: GenX contamination must be stopped: http://www.fayobserver.com/news/20180714/residents-genx-contamination-must-be-stopped
    - Correction of the false/misleading titles from last week's google news was published by Calgon:
        - CALGON CARBON ADDRESSES INACCURACIES IN MEDIA REPORTS SURROUNDING PFAS & GenX CONTAMINATION: https://globenewswire.com/news-release/2018/07/13/1537287/0/en/CALGON-CARBON-ADDRESSES-INACCURACIES-IN-MEDIA-REPORTS-SURROUNDING-PFAS-GenX-CONTAMINATION.html
        - Essentially, news outlets were saying Calgon was partially responsible for releasing GenX, which they say is untrue they just share a wastewater output

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Message

From: Liguori, Krista [liguori.krista@epa.gov]
Sent: 7/27/2018 3:51:34 PM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]
Subject: GenX News Updates July 21-27

Hi all,

Here are the news updates on GenX for the week of July 21st through July 27th!

PubMed/Google Scholar:

1. None

Google News

1. July 27th
    a. Federal Health Study on Drinking Water Contaminants Calls into Question Safety of Nation's Drinking Water Supply: https://blog.ucsusa.org/science-blogger/federal-health-study-on-drinking-water-contaminants-calls-into-question-safety-of-nations-drinking-water-supply
        i. About PFASs, but doesn't specifically mention GenX.
2. July 26th
    a. 'How did we get here?' UNCW professor gives lecture on GenX: http://www.wect.com/story/38743073/dr-larry-cahoon-to-give-talk-on-genx-thursday-night
    b. Fayetteville Observer: Key step for GenX testing: http://www.starnewsonline.com/opinion/20180726/fayetteville-observer-key-step-for-genx-testing
3. July 25th
    a. CFPUA releases latest results from testing for GenX: http://www.wect.com/story/38731489/cfpua-releases-latest-results-from-testing-for-genx
4. July 24th
    a. The EPA wants to hear from you on July 25 on this important issue (Opinion): https://www.pennlive.com/opinion/2018/07/the_epa_wants_to_hear_from_you.html
5. July 23rd – none
6. July 22nd
    a. Opinion: GenX Reminds NC that the environment is not a top priority for lawmakers: http://www.technicianonline.com/opinion/article_94f47c18-8df6-11e8-8733-8b20fa0e9644.html
7. July 21st
    a. Our View: a key step for GenX testing: http://www.fayobserver.com/opinion/20180721/our-view-key-step-for-genx-testing
    b. Time to handle GenX threat: https://www.robesonian.com/opinion/113384/time-to-handle-genx-threat

Have a good weekend!

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Message

From: Liguori, Krista [liguori.krista@epa.gov]
Sent: 8/3/2018 2:50:59 PM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]
Subject: GenX News Updates August 3rd

Hi all!

Here are the news updates on GenX for the week of July 28th through August 3rd, it's really slowed down!

PubMed / Google Scholar:
Nothing new

Google News

- August 3rd - none
- August 2nd
  a. Editorial: EPA's hopeful move on GenX: http://www.thetimesnews.com/opinion/20180802/editorial-epas-hopeful-move-on-genx
- August 1st
  a. Local leaders: Chemours Unresponsive to Wilmington meeting on GenX: http://www.wilmingtonbiz.com/more_news/2018/08/01/local_leaders_chemours_unresponsive_to_wilmington_meeting_on_genx/17801
- July 31st
  a. Filters don't fade GenX concerns for Cumberland residents: http://abc11.com/health/filters-dont-fade-genx-concerns-for-cumberland-residents/3857031/
- July 30th
  a. Our View: EPA raises hopes for answers and action on GenX: http://www.fayobserver.com/opinion/20180730/our-view-epa-raises-hopes-for-answers-and-action-on-genx
- July 29th - none
- July 28th
  a. Chemours installing free GenX filters: https://www.robesonian.com/news/113764/chemours-installing-free-genx-filters
- July 27th afternoon:
  a. Cumberland County Residents Asking for lower tax bill due to GenX: https://www.cbs17.com/news/investigators/cumberland-county-residents-asking-for-lower-tax-bill-due-to-genx/1328784926
  b. EPA announces Fayetteville event to discuss GenX, other PFAS: http://www.starnewsonline.com/news/20180727/epa-announces-fayetteville-event-to-discuss-genx-other-pfas

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Message

From: Liguori, Krista [liguori.krista@epa.gov]
Sent: 8/10/2018 7:57:59 PM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]
Subject: GenX News Updates August 4-10

Hi all,

Here are the news updates on GenX from this week!

Google Scholar/PubMed:

- (this is just a summary doc put together by an intern, but comes up on google scholar for some reason): Research Review of GenX by Jiaqi Li, Medical Advocates for Health Air, Clear Air Carolina, July 20, 2018
    a. https://cleanaircarolina.org/wp-content/uploads/2018/07/Research-Review-of-GenX-FINAL.pdf
- Nothing new

Google News:

- Aug 10 – none
- Aug 9 – none
- Aug 8
    a. State's science on safe level of GenX in water called into doubt: https://carolinapublicpress.org/28110/states-science-on-safe-level-of-genx-in-water-called-into-doubt/
    b. Residents can give feedback on GenX, other compounds: http://www.fayobserver.com/news/20180808/residents-can-give-feedback-on-genx-other-compounds
    c. Researchers from various NC universities banding together to understand GenX: https://www.cbs17.com/news/local-news/cumberland-county-news/researchers-from-various-nc-universities-banding-together-to-understand-genx/1354807058
    d. Duke expert helps spearhead state's new water-testing program: https://today.duke.edu/2018/08/duke-expert-helps-spearhead-states-new-water-testing-program
- Aug 7
    a. Consider this: Chemours efforts to reduce emissions of GenX, but what about damage done?: http://www.wect.com/story/38830623/consider-this-chemours-efforts-to-reduce-emissions-of-genx-but-what-about-damage-done
    b. EPA to hold GenX Meeting in Fayetteville: https://www.coastalreview.org/2018/08/epa-to-hold-genx-meeting-in-fayetteville/
- Aug 6
    a. Are toxic chemicals in our drinking water? Statewide testing should let us know.: https://www.newsobserver.com/news/local/article216001615.html
    b. Chemours declines local meeting to update GenX efforts: http://www.starnewsonline.com/news/20180806/chemours-declines-local-meeting-to-update-genx-efforts
    c. Chemours declines public meeting request by Wilmington leaders: http://www.wilmingtonbiz.com/more_news/2018/08/06/chemours_declines_public_meeting_request_by_wilmington_leaders/17816
- Aug 5
    a. Our view: we need a strong EPA response to GenX pollution: http://www.fayobserver.com/opinion/20180805/our-view-we-need-strong-epa-response-to-genx-pollution
- Aug 4 – none

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Message

From: Liguori, Krista [liguori.krista@epa.gov]
Sent: 8/17/2018 6:02:37 PM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]
Subject: GenX News Updates August 17th

Hi all,

Here are the news updates on GenX for the week of August 11 through 17th. Big week due to the EPA meeting in NC, there are two national stories which I bolded below.

Google Scholar / PubMed
- None

Google News
- Aug 17
  - Questions prevail after EPA GenX meeting: https://www.northcarolinahealthnews.org/2018/08/17/questions-prevail-after-epa-genx-meeting/
- Aug 16
  - Scientists look for GenX in Lake Waccamaw alligators: http://www.starnewsonline.com/sports/20180816/scientists-look-for-genx-in-lake-waccamaw-alligators
  - Is GenX in the water? NC research project aims to find out: http://www.starnewsonline.com/news/20180816/is-genx-in-water-nc-research-project-aims-to-find-out
  - 'What did we do?' Families anxious about chemicals found in tap water: https://www.cnn.com/2018/08/16/health/tap-water-crisis-toxic-michigan-pfoa-pfas/
  - Attorneys to Chemours: stop talking to pollution sufferers: https://www.delawareonline.com/story/money/business/2018/08/16/attorneys-chemours-stop-talking-pollution-victims/985918002/
- Aug 15
  - **Communities across the U.S. worry over contaminated drinking water: http://fortune.com/2018/08/15/pfas-chemicals-drinking-water-contamination/**
  - **Dangerous 'forever chemicals' have been found in US drinking water at alarmingly high rates – here's what to know about PFAS: https://www.businessinsider.com/what-are-pfas-chemicals-2018-8?r=UK&IR=T**
  - Chemours cuts off bottled water for some N Carolina families: https://www.chron.com/news/article/Chemours-cuts-off-bottled-water-for-some-N-13157448.php
  - CFPUA plan to filter GenX raises financial concerns for customers: https://www.wwaytv3.com/2018/08/15/cfpua-plan-to-filter-genx-raises-financial-concerns-for-customers/
  - Public calls for stronger EPA action on PFAS: https://www.coastalreview.org/2018/08/public-calls-for-stronger-epa-action-on-pfas/
  - Chemours to stop providing bottled water to some residents with GenX tainted wells: http://www.wunc.org/post/chemours-stop-providing-bottled-water-some-residents-genx-tainted-wells#stream/0
  - Lawyers want to stop Chemours' communication with clients: http://www.fayobserver.com/news/20180815/lawyers-want-to-stop-chemours-communication-with-clients
  - Science advisory board to talk GenX, TCE: https://www.coastalreview.org/2018/08/science-advisory-board-to-talk-genx-tce/
- Aug 14

    - EPA gets earful from Cumberland residents on GenX: https://www.wral.com/epa-gets-earful-from-cumberland-residents-on-genx/17769310/
    - EPA hears pleas to get tough on GenX, other contaminants: http://www.fayobserver.com/news/20180814/epa-hears-pleas-to-get-tough-on-genx-other-contaminates
    - EPA listens to resident concerns over GenX contamination: https://www.cbs17.com/news/investigators/epa-listens-to-resident-concerns-over-genx-contamination/1369968341
    - 'I'm very concerned' Toxicologist speaks at CFPUA event about GenX, other chemicals: http://www.wect.com/story/38885269/im-very-concerned-toxicologist-speaks-at-cfpua-event-about-genx-other-chemicals
    - Residents to EPA: do more about GenX, PFAS: http://www.starnewsonline.com/news/20180814/residents-to-epa-do-more-about-genx-pfas
    - Residents voice concerns to the EPA about GenX: http://spectrumlocalnews.com/nc/triangle-sandhills/news/2018/08/14/epa-hosts-community-forum-about-genx
- Aug 13
    - EPA to host forum on GenX, other compounds in Fayetteville Tuesday: http://www.wect.com/story/38869741/epa-to-host-forum-on-genx-other-compounds-in-fayetteville-tuesday
    - CFPUA maps out plan to spend state funds: http://www.starnewsonline.com/news/20180813/cfpua-maps-out-plan-to-spend-state-funds
    - EPA hosting all-day PFAS meeting Tuesday: http://www.whqr.org/post/epa-hosting-all-day-pfas-meeting-tuesday#stream/0
- Aug 12
    - What to expect from Tuesday's EPA event on GenX, other chemicals: http://www.starnewsonline.com/news/20180812/what-to-expect-from-tuesdays-epa-event-on-genx-other-chemicals
    - A toxin in every household: PFAS faces government roadblocks to EPA regulation, but states are fighting back: https://www.sierraclub.org/sierra/PFAS-toxin-every-household-states-sue-chemical-companies
- Aug 11
    - Kemp Burdette: we can't wait for GenX action: http://www.fayobserver.com/opinion/20180811/kemp-burdette-we-cant-wait-for-genx-action
    - Trey Glenn: What the EPA is doing about PFAS chemicals: http://www.fayobserver.com/opinion/20180811/trey-glenn-what-epa-is-doing-about-pfas-chemicals
    - Protestors blame Chemours, DuPont for health problems: http://www.fayobserver.com/news/20180811/protesters-blame-chemours-dupont-for-health-problems
    - Chemours and DEQ at odds over filters for homes with tainted wells: http://www.wunc.org/post/chemours-and-deq-odds-over-filters-homes-tainted-wells#stream/0
    - Equipment removing GenX from air, Chemours says: http://www.fayobserver.com/news/20180810/equipment-removing-genx-from-air-chemours-says

Krista Liguori, MSPH
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Message

From: Liguori, Krista [liguori.krista@epa.gov]
Sent: 8/24/2018 8:43:11 PM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]
Subject: GenX Updates Week of August 24

Hi all,

Here are the news updates for GenX this week.

Google Scholar / PubMed

- Emissions, Transport, and Fate of Emerging Per- and Polyfluoroalkyl Substances from One of the Major Fluoropolymer Manufacturing Facilities in China: https://www.ncbi.nlm.nih.gov/pubmed/30118215

Google News

- Aug 24
  - GenX update: chemical threshold, EPA meeting, and ongoing concerns: http://www.wunc.org/post/genx-update-chemical-threshold-epa-meeting-and-ongoing-concerns#stream/0
  - Pivotal fall ahead for GenX research, action: https://www.coastalreview.org/2018/08/pivotal-fall-ahead-for-genx-research-action/
- Aug 23
- Aug 22
  - Murder suspect sues Sheriff from NC jail over GenX-contaminated water: https://myfox8.com/2018/08/22/murder-suspect-sues-sheriff-from-nc-jail-over-genx-contaminated-water/
    - More of same story: http://www.wect.com/story/38930466/i-get-nauseous-murder-suspect-sues-over-genx-tainted-water-at-county-jail
- Aug 21
  - GenX: science panel backs state officials' move: https://www.bladenjournal.com/news/19459/genx-science-panel-backs-state-officials-move
  - Editorial: EPA hopefully looking out for GenX victims: http://www.thetimesnews.com/opinion/20180821/editorial-epa-hopefully-looking-out-for-genx-victims
  - Science advisory board: state's reasoning was sound in determining health goal for GenX in drinking water: https://pulse.ncpolicywatch.org/2018/08/21/science-advisory-board-states-reasoning-was-sound-in-determining-health-goal-for-genx-in-drinking-water/
- Aug 20
  - **Science Panel: Health Goal for Chemical in Water is Right (US News & World Report):** https://www.usnews.com/news/best-states/north-carolina/articles/2018-08-20/science-panel-health-goal-for-chemical-in-water-is-right
  - State board backs low threshold on GenX: https://www.wral.com/state-board-backs-low-threshold-on-genx/17782475/
  - GenX health goal gets stamp of approval: http://www.starnewsonline.com/news/20180820/genx-health-goal-gets-stamp-of-approval
  - NC science panel: health goal for GenX in drinking water is right: http://www.fayobserver.com/news/20180820/nc-science-panel-health-goal-for-genx-in-drinking-water-is-right
  - DEQ to host public info session on GenX: http://www.wect.com/story/38921271/deq-to-host-public-info-session-on-genx

    - Fayetteville PWC urges DEQ to lower 1,4 dioxane in drinking water: http://www.fayobserver.com/news/20180820/fayetteville-pwc-urges-deq-to-lower-14-dioxane-in-drinking-water
    - In letter to governor, New Hanover Co. rep asks 'what does Chemours have to hide?': http://www.wect.com/story/38922859/in-letter-to-governor-new-hanover-co-rep-asks-what-does-chemours-have-to-hide
    - Representative: demand Chemours officials speak in Wilmington or shut the plant down: https://www.wwaytv3.com/2018/08/20/representative-demand-chemours-officials-speak-in-wilmington-or-shut-the-plant-down/
    -
- Aug 19
    - Our view: EPA visit gives reason for cautious GenX optimism: http://www.fayobserver.com/opinion/20180819/our-view-epa-visit-gives-reason-for-cautious-genx-optimism
    - Guests at EPA forum believe feds won't do anything to help with GenX: https://www.bladenjournal.com/news/19435/guests-at-epa-forum-believe-feds-wont-do-anything-to-help-with-genx
    - Editorial: why we need to invest in water-treatment upgrades: http://www.starnewsonline.com/opinion/20180819/editorial-why-we-need-to-invest-in-water-treatment-upgrades
- Aug 18
    - Josh Stein to Trump EPA: stop plan to 'censor science' or face a lawsuit: https://www.charlotteobserver.com/news/politics-government/article216894800.html

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Message

From: Liguori, Krista [liguori.krista@epa.gov]
Sent: 8/31/2018 5:21:25 PM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]
Subject: GenX News Updates Aug 25-31

Hi all,

Here are the news updates around GenX for the week of August 25-31st!

Google Scholar / PubMed

- Electron attachment to hexafluoropropylene oxide (HFPO): https://www.research-collection.ethz.ch/bitstream/handle/20.500.11850/284120/HFPO_article_for_website.pdf?sequence=1&isAllowed=y

Google News

- Aug 31
  - Deadline here for GenX Emissions cut: https://www.coastalreview.org/2018/08/deadline-here-for-genx-emissions-cut/
  - SELC files new lawsuit to stop GenX: https://www.coastalreview.org/2018/08/selc-files-lawsuit-to-stop-genx/
  - Public input sought on draft GenX report: https://www.coastalreview.org/2018/08/public-input-sought-on-draft-genx-report/
  - Chemours gives leaders tour, insight to GenX solution: https://www.bladenjournal.com/news/19628/chemours-gives-leaders-tour-insight-to-genx-solution
- Aug 30
  - Tour Chemours: a look at company's plan to keep GenX from you: https://www.wwaytv3.com/2018/08/30/tour-chemours-a-look-at-companys-plan-to-keep-genx-from-you/
  - Inside Chemours: a tour of the facility blamed for GenX, status of $100 million upgrades: http://www.wect.com/story/38994675/inside-chemours-a-tour-of-the-facility-blamed-for-genx-status-of-100-million-upgrades
  - Chemours hit with yet another lawsuit over GenX, fluorinated compounds contamination: https://pulse.ncpolicywatch.org/2018/08/30/chemours-hit-with-yet-another-lawsuit-over-genx-fluorinated-compounds-contamination/
  - Enviro sues Chemours, alleging NC water contamination: https://www.law360.com/delaware/articles/1078224/enviro-sues-chemours-alleging-nc-water-contamination
  - State officials to update public on GenX at meeting today: http://www.fayobserver.com/news/20180830/state-officials-to-update-public-on-genx-at-meeting-today
  - Chemours sued by environmental group: https://www.bladenjournal.com/news/19617/chemours-sued-by-environmental-group
  - State science advisory board wants your input on GenX report: https://www.wwaytv3.com/2018/08/30/state-science-advisory-board-wants-your-input-on-genx-report/
  - DEQ to host public info session about GenX on Thursday: http://www.wect.com/story/38921271/deq-to-host-public-info-session-about-genx-on-thursday
  - Cape Fear River Watch, SELC sue Chemours for alleged GenX violations: http://www.starnewsonline.com/news/20180829/cape-fear-river-watch-selc-sue-chemours-for-alleged-genx-violations

    - Residents near Chemours say plant slack on bottled water promise: http://www.fayobserver.com/news/20180830/residents-near-chemours-say-plant-slack-on-bottled-water-promise
    - Environmental group files federal lawsuit over Chemours' alleged GenX contamination: https://www.bizjournals.com/triangle/news/2018/08/30/environmental-group-files-federal-lawsuit-over.html
    - Action on PFAS pollution broadens: https://cen.acs.org/environment/pollution/Action-PFAS-pollution-broadens/96/i35
- Aug 29
    - Environmentalists ask judge to stop toxic discharges into Cape Fear River: https://www.newsobserver.com/news/business/article217526470.html
    - EPA publishes results of PFAS treatability study: https://www.lexology.com/library/detail.aspx?g=f44d8a75-7817-4c66-8a50-f7f5a505e20e
- Aug 28
    - **Genx: U.S. Senate Gets in the Game: http://www.whqr.org/post/genx-us-senate-gets-game#stream/0**
    - Scientists back NC's GenX health goal: https://www.wateronline.com/doc/scientists-back-n-c-s-genx-health-goal-0001
    - Attorney general addresses ongoing Chemours litigation: https://www.wwaytv3.com/2018/08/28/attorney-general-addresses-ongoing-chemours-litigation/
- Aug 27
    - EPA confirms GenX-related compounds used in solar panels: https://www.laurinburgexchange.com/news/17566/epa-confirms-genx-related-compounds-used-in-solar-panels
- Aug 26 – none
- Aug 25
    - Our view: stopping GenX is only 1 step toward safer water: http://www.fayobserver.com/opinion/20180825/our-view-stopping-genx-is-only-1-step-toward-safer-water

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Message

From: Liguori, Krista [liguori.krista@epa.gov]
Sent: 9/7/2018 5:03:10 PM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]
Subject: GenX News Updates Sep 1-7

Hi all,

Here are the news updates on GenX for the week of September 1 through 7.

Google Scholar / PubMed

- None

Google News

- Sep 7
  - Brunswick resident discusses GenX, PFAS on Capitol Hill: http://www.starnewsonline.com/news/20180907/brunswick-resident-discusses-genx-pfas-on-capitol-hill
  - EPA will hold PFAS meetings in Michigan after all: https://www.mlive.com/news/index.ssf/2018/09/epa_will_hold_pfas_meetings_in.html
- Sep 6
  - Film about PFOA contamination in West Virginia to be screened at Thalian Hall: http://www.wect.com/story/39035002/film-about-genx-chemours-to-be-screened-at-thalian-hall
  - GenX: local resident addressing congress on water contamination: http://www.whqr.org/post/genx-local-resident-addressing-congress-water-contamination#stream/0
  - **Link the House Hearing**-- Perfluorinated chemicals in the environment: an update on the response to contamination and challenges presented: https://energycommerce.house.gov/hearings/perfluorinated-chemicals-in-the-environment-an-update-on-the-response-to-contamination-and-challenges-presented/
  - GenX: Brunswick county's Emily Donovan addresses House committee in Washington, D.C.: http://www.whqr.org/post/genx-brunswick-countys-emily-donovan-addresses-house-committee-washington-dc#stream/0
  - River watch screens film about C8, GenX contamination: https://www.wwaytv3.com/2018/09/06/river-watch-screens-film-about-c8-genx-contamination/
  - Congress wants EPA to more quickly regulate unsafe chemicals: https://www.mystateline.com/news/politics/congress-wants-epa-to-more-quickly-regulate-unsafe-chemicals/1423447198
- Sep 5
  - GenX levels decrease in August at Sweeney plant: http://www.wect.com/story/39034199/genx-levels-decrease-in-august-at-sweeney-plant
  - Deadline here for GenX emissions cut: https://www.northcarolinahealthnews.org/2018/09/05/deadline-here-for-chemours-genx-emissions-cut/
- Sep 4
- Sep 3
  - Cape Fear river watch presenting film, discussion about water and GenX: https://www.wwaytv3.com/2018/09/03/cape-fear-river-watch-free-film-genx-water/
- Sep 2
  - Letters, Oct 2: Debating biased coverage of Trump, GenX: http://www.starnewsonline.com/opinion/20180902/letters-oct-2-debating-biased-coverage-of-trump-genx
- Sep 1

- Our view: and so we wait for federal GenX guidelines: http://www.fayobserver.com/opinion/20180901/our-view-and-so-we-wait-for-federal-genx-guidelines

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Appointment

From: Strong, Jamie [Strong.Jamie@epa.gov]
Sent: 1/31/2018 8:29:05 PM
To: Strong, Jamie [Strong.Jamie@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]

Subject: touch base on GenX assessment
Location: DCRoomWest5231M/DC-CCW-OST

Start: 2/8/2018 3:00:00 PM
End: 2/8/2018 3:30:00 PM
Show Time As: Busy

Required Attendees: Donohue, Joyce; Miller, Gregory; Jacobs, Brittany

Appointment

From: Jacobs, Brittany [jacobs.brittany@epa.gov]
Sent: 2/8/2018 4:10:36 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]

Subject: GenX Assessment Check In
Attachments: Untitled Attachment; Untitled Attachment; Untitled Attachment; Canceled: GenX Assessment Check In ; Untitled Attachment; Untitled Attachment; Untitled Attachment; Canceled: GenX Assessment Check In ; Untitled Attachment
Location: DCRoomWest-5231AA/DC-CCW-OST

Start: 2/13/2018 7:00:00 PM
End: 2/13/2018 8:00:00 PM
Show Time As: Busy

Recurrence: Weekly
every Tuesday from 2:00 PM to 3:00 PM
Required Attendees: Donohue, Joyce; Strong, Jamie; Miller, Gregory

Appointment

From: Strong, Jamie [Strong.Jamie@epa.gov]
Sent: 4/5/2018 12:49:26 PM
To: Strong, Jamie [Strong.Jamie@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]

Subject: genx
Location: DCRoomWest5231M/DC-CCW-OST

Start: 4/5/2018 1:00:00 PM
End: 4/5/2018 2:00:00 PM
Show Time As: Tentative

Required Attendees: Jacobs, Brittany; Miller, Gregory; Donohue, Joyce

Appointment

From: Strong, Jamie [Strong.Jamie@epa.gov]
Sent: 3/14/2018 6:19:50 PM
To: Strong, Jamie [Strong.Jamie@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]

Subject: GenX Study Discussion
Location: DCRoomWest5231M/DC-CCW-OST

Start: 3/15/2018 1:30:00 PM
End: 3/15/2018 3:00:00 PM
Show Time As: Busy

Required Attendees: Miller, Gregory; Jacobs, Brittany; Donohue, Joyce

Appointment

From: Strong, Jamie [Strong.Jamie@epa.gov]
Sent: 3/15/2018 12:51:55 PM
To: Strong, Jamie [Strong.Jamie@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]

Subject: GenX part 2
Location: DCRoomWest5233AA/DC-CCW-OST

Start: 3/15/2018 3:00:00 PM
End: 3/15/2018 4:00:00 PM
Show Time As: Busy

Required Attendees: Jacobs, Brittany; Miller, Gregory; Donohue, Joyce

Appointment

From: Villeneuve, Dan [Villeneuve.Dan@epa.gov]
Sent: 9/12/2018 2:35:57 PM
To: Villeneuve, Dan [Villeneuve.Dan@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]; Hines, Ronald [Hines.Ronald@epa.gov]; Abedini, Jaleh [abedini.jaleh@epa.gov]; Angrish, Michelle [Angrish.Michelle@epa.gov]; Ankley, Gerald [Ankley.Gerald@epa.gov]; Barron, Mace [Barron.Mace@epa.gov]; Biales, Adam [Biales.Adam@epa.gov]; Blackwell, Brett [Blackwell.Brett@epa.gov]; Botteri, Nicole [Botteri.Nicole@epa.gov]; Carleton, Jim [Carleton.Jim@epa.gov]; Carswell, Gleta [Carswell.Gleta@epa.gov]; Cavallin, Jenna [Cavallin.Jenna@epa.gov]; Cheng, Wan-Yun [Cheng.Wan-Yun@epa.gov]; Chorley, Brian [Chorley.Brian@epa.gov]; Collette, Tim [Collette.Tim@epa.gov]; Conley, Justin [Conley.Justin@epa.gov]; Conolly, Rory [Conolly.Rory@epa.gov]; Corton, Chris [Corton.Chris@epa.gov]; Degitz, Sigmund [Degitz.Sigmund@epa.gov]; Doering, Jonathon [doering.jonathon@epa.gov]; Edwards, Stephen [Edwards.Stephen@epa.gov]; Ekman, Drew [Ekman.Drew@epa.gov]; El-Masri, Hisham [El-Masri.Hisham@epa.gov]; Fay, Kellie [Fay.Kellie@epa.gov]; Franzosa, Jill [Franzosa.Jill@epa.gov]; Fry, Meridith [Fry.Meridith@epa.gov]; Ge, Yue [Ge.Yue@epa.gov]; Gessner, Lauren [gessner.lauren@epa.gov]; Gilbert, Mary E. [Gilbert.Mary@epa.gov]; Gray, Earl [Gray.Earl@epa.gov]; Haselman, Jon [Haselman.Jon@epa.gov]; Hassan, Iman [Hassan.Iman@epa.gov]; Hazari, Mehdi [Hazari.Mehdi@epa.gov]; Herr, David [Herr.David@epa.gov]; Hester, Susan [Hester.Susan@epa.gov]; Hill, Thomas [hill.thomas@epa.gov]; Hines, David [hines.david@epa.gov]; Hornung, Michael [Hornung.Michael@epa.gov]; Hubal, Elaine [Hubal.Elaine@epa.gov]; Hughes, MichaelF [Hughes.MichaelF@epa.gov]; Hunter, Sid [Hunter.Sid@epa.gov]; Ives, Cataia [Ives.Cataia@epa.gov]; Jarabek, Annie [Jarabek.Annie@epa.gov]; Jensen, Kathleen [Jensen.Kathleen@epa.gov]; Jeremy Leonard [jaleonar@ncsu.edu]; Joachim Pleil [Pleil@unc.edu]; Judson, Richard [Judson.Richard@epa.gov]; Kahl, Michael [Kahl.Michael@epa.gov]; Kenyon, Elaina [Kenyon.Elaina@epa.gov]; Klinefelter, Gary [Klinefelter.Gary@epa.gov]; Kodavanti, Prasada Rao [Kodavanti.Prasada@epa.gov]; Korte, Joe [Korte.Joe@epa.gov]; Kosian, Pat [Kosian.Pat@epa.gov]; LaLone, Carlie [lalone.carlie@epa.gov]; Laws, Susan [Laws.Susan@epa.gov]; Leonard, Jeremy [Leonard.Jeremy@epa.gov]; Lyons, David [Lyons.David@epa.gov]; Miller, David [Miller.DavidJ@epa.gov]; Miller-Dykeman, Ashley [miller-dykeman.ashley@epa.gov]; Mills, Lesley [Mills.Lesley@epa.gov]; Mills, Marc [mills.marc@epa.gov]; Mortensen, Holly [Mortensen.Holly@epa.gov]; Moser, Ginger [Moser.Ginger@epa.gov]; Nelms, Mark [Nelms.Mark@epa.gov]; Nelson, Gail [Nelson.Gail@epa.gov]; Nelson, Garret [Nelson.Garret@epa.gov]; Olker, Jennifer [olker.jennifer@epa.gov]; OShaughnessy, Katie [OShaughnessy.Katie@epa.gov]; Phillips, Katherine [Phillips.Katherine@epa.gov]; Pittman, Maureen [Pittman.Maureen@epa.gov]; Pleil, Joachim [Pleil.Joachim@epa.gov]; Ramasamy, Santhini [Ramasamy.Santhini@epa.gov]; Scatterday, Allysan [scatterday.allysan@epa.gov]; Schreinemachers, Dina [Schreinemachers.Dina@epa.gov]; Simmons, Jane [Simmons.Jane@epa.gov]; Stoker, Tammy [Stoker.Tammy@epa.gov]; Suarez, Samuel [Suarez.Samuel@epa.gov]; Suen, Alisa [suen.alisa@epa.gov]; Tal, Tamara [Tal.Tamara@epa.gov]; Tan, Cecilia [Tan.Cecilia@epa.gov]; Teng, Quincy [Teng.Quincy@epa.gov]; Thai, Sheau-Fung [Thai.Sheau-Fung@epa.gov]; VanEmon, Jeanette [VanEmon.Jeanette@epa.gov]; Veronesi, Bellina [Veronesi.Bellina@epa.gov]; Wang, Rong-Lin [Wang.Rong-Lin@epa.gov]; Wehmas, Leah [wehmas.leah@epa.gov]; Wilson, Vickie [Wilson.Vickie@epa.gov]; Frithsen, Jeff [Frithsen.Jeff@epa.gov]; Cowden, John [Cowden.John@epa.gov]; Tietge, Joe [Tietge.Joe@epa.gov]

Subject: FW: CSS AOPDD Webinar - Conley - GenX effects in rats
Location: dial: 1 Ex. 6 Personal Privacy (PP)

Start: 9/18/2018 7:00:00 PM
End: 9/18/2018 7:45:00 PM
Show Time As: Busy

Appointment

From: Donohue, Joyce [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BB5340EC745149EDBF80D2B8B2F9B919-JDONOHUE]
Sent: 3/5/2018 3:09:06 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]

Subject: Accepted: OST and RAD GenX Assessment Check In
Location: DCRoomWest5231L/DC-CCW-OST

Start: 3/7/2018 5:30:00 PM
End: 3/7/2018 6:00:00 PM
Show Time As: Busy

Appointment

From: Donohue, Joyce [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BB5340EC745149EDBF80D2B8B2F9B919-JDONOHUE]
Sent: 4/30/2018 3:56:09 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]

Subject: Accepted: GenX Assessment Check In
Location: DCRoomWest-5231AA/DC-CCW-OST

Start: 5/14/2018 6:00:00 PM
End: 5/14/2018 7:00:00 PM
Show Time As: Busy

Appointment

From: Strong, Jamie [Strong.Jamie@epa.gov]
Sent: 12/6/2018 8:23:14 PM
To: Strong, Jamie [Strong.Jamie@epa.gov]; Jones, Samantha [Jones.Samantha@epa.gov]; Lambert, Jason [Lambert.Jason@epa.gov]; Owens, Beth [Owens.Beth@epa.gov]; Champlin, Anna [Champlin.Anna@epa.gov]; Bahadori, Tina [Bahadori.Tina@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Flaherty, Colleen [Flaherty.Colleen@epa.gov]; Harper, Ashley [harper.ashley@epa.gov]; Drinkard, Andrea [Drinkard.Andrea@epa.gov]; Grevatt, Peter [Grevatt.Peter@epa.gov]; Wadlington, Christina [Wadlington.Christina@epa.gov]; Mattas-Curry, Lahne [Mattas-Curry.Lahne@epa.gov]; Nagle, Deborah [Nagle.Deborah@epa.gov]; Holsinger, Hannah [Holsinger.Hannah@epa.gov]; Brinkerhoff, Chris [Brinkerhoff.Chris@epa.gov]; Soares, Barbara [soares.barbara@epa.gov]; Benson, Amy [Benson.Amy@epa.gov]; Burneson, Eric [Burneson.Eric@epa.gov]; Babcock, Amy [babcock.amy@epa.gov]; Henry, Tala [Henry.Tala@epa.gov]; Albert, Ryan [Albert.Ryan@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]; Mclain, Jennifer [Mclain.Jennifer@epa.gov]; Lalley, Cara [Lalley.Cara@epa.gov]
CC: Ross, David P [ross.davidp@epa.gov]; Penman, Crystal [Penman.Crystal@epa.gov]

Subject: GenX chemicals and PFBS celebration
Location: Occidental Grill

Start: 12/12/2018 9:00:00 PM
End: 12/12/2018 11:30:00 PM
Show Time As: Tentative

Required Attendees: Jones, Samantha; Lambert, Jason; Owens, Beth; Champlin, Anna; Bahadori, Tina; Jacobs, Brittany; Miller, Gregory; Behl, Betsy; Flaherty, Colleen; Lalley, Cara; Harper, Ashley; Drinkard, Andrea; Grevatt, Peter; Wadlington, Christina; Mattas-Curry, Lahne; Nagle, Deborah; Holsinger, Hannah; Brinkerhoff, Chris; Soares, Barbara; Benson, Amy; Burneson, Eric; Babcock, Amy; Henry, Tala; Albert, Ryan; Donohue, Joyce; Mclain, Jennifer
Optional Attendees: Penman, Crystal; Ross, David P

Message

From: Behl, Betsy [Behl.Betsy@epa.gov]
Sent: 10/20/2021 1:16:57 PM
To: Euling, Susan [Euling.Susan@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]; Kraft, Andrew [Kraft.Andrew@epa.gov]; Lindberg, Casey [Lindberg.Casey@epa.gov]

OGWDW has set up two meetings for me to go to today to talk about GenX. this morning its water division directors and later today ASDWA. JUst using teh high level outreach presentation as a guide.

Appointment

From: Grevatt, Peter [Grevatt.Peter@epa.gov]
Sent: 6/13/2018 4:46:10 PM
To: Grevatt, Peter [Grevatt.Peter@epa.gov]; patricia.m.underwood.civ@mail.mil; maria.vargas@navy.mil; wanda.holmes@navy.mil; freeman.holifield.mil@mail.mil; andrew.rak@noblis.org; andrew.rak2.ctr@mail.mil; mark.s.johnson.civ@mail.mil; jennifer.corack@navy.mil; Anita.K.Meyer@usace.army.mil; james.s.smith454.civ@mail.mil; barry.marcel@us.af.mil; Sandra Howard [Sandra.Howard@HHS.GOV]; Suzanne_Fitzpatrick [Suzanne.Fitzpatrick@fda.hhs.gov]; Jason.Aungst@fda.hhs.gov; Penelope.Rice@fda.hhs.gov; Paul.South@fda.hhs.gov; wic1@cdc.gov; txf5@cdc.gov; pjb7@cdc.gov; Christopher.Weis@nih.gov; miller.aubrey@nih.gov; suzanne.fenton@nih.gov; michael.devito@nih.gov; birnbaumls@niehs.nih.gov; fjh1@cdc.gov; seg3@cdc.gov; eaw0@cdc.gov; iwa6@cdc.gov; oii2@cdc.gov; pxp5@cdc.gov; linda.s.wennerberg@nasa.gov; James_H_Kim Ex. 6 Personal Privacy (PP); mfocazio@usgs.gov; Terra.irons@va.gov; Mclain, Jennifer [Mclain.Jennifer@epa.gov]; Holsinger, Hannah [Holsinger.Hannah@epa.gov]; Wadlington, Christina [Wadlington.Christina@epa.gov]; Tiago, Joseph [Tiago.Joseph@epa.gov]; Burneson, Eric [Burneson.Eric@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Harper, Ashley [harper.ashley@epa.gov]; Drinkard, Andrea [Drinkard.Andrea@epa.gov]; Behrsing, Tracy [behrsing.tracy@epa.gov]; Babcock, Amy [babcock.amy@epa.gov]; Aubee, Catherine [Aubee.Catherine@epa.gov]; Henry, Tala [Henry.Tala@epa.gov]; Orme-Zavaleta, Jennifer [Orme-Zavaleta.Jennifer@epa.gov]; Gillespie, Andrew [Gillespie.Andrew@epa.gov]; Bahadori, Tina [Bahadori.Tina@epa.gov]; Jones, Samantha [Jones.Samantha@epa.gov]; Lambert, Jason [Lambert.Jason@epa.gov]; Lavoie, Emma [Lavoie.Emma@epa.gov]; Owens, Beth [Owens.Beth@epa.gov]; Moore, Alexa [moore.alexa@epa.gov]; Champlin, Anna [Champlin.Anna@epa.gov]; Rodan, Bruce [rodan.bruce@epa.gov]; Mattas-Curry, Lahne [Mattas-Curry.Lahne@epa.gov]; Raffaele, Kathleen [raffaele.kathleen@epa.gov]; Gervais, Gregory [Gervais.Gregory@epa.gov]; Leonard, Paul [leonard.paul@epa.gov]; Soares, Barbara [soares.barbara@epa.gov]; Speth, Thomas [Speth.Thomas@epa.gov]; Lehman, Rachel [lehman.rachel@epa.gov]; michael.j.quinn104.civ@mail.mil; Birchfield, Norman [Birchfield.Norman@epa.gov]
CC: Albert, Ryan [Albert.Ryan@epa.gov]; Foster, Stiven [Foster.Stiven@epa.gov]; Libelo, Laurence [Libelo.Laurence@epa.gov]; Cooke, Maryt [Cooke.Maryt@epa.gov]; Burchette, John [Burchette.John@epa.gov]; Davis, Todd H. [Davis.ToddH@epa.gov]

Subject: PFAS Toxicity Assessment Discussion
Attachments: GenX PFBS_External Peer Review_charge questions_06 18 18 FINAL.docx
Location: DCRoomEast2123/DC-ICC-OW-OGWDW - 2 Ex. 6 Personal Privacy (PP)

Start: 6/20/2018 5:00:00 PM
End: 6/20/2018 6:30:00 PM
Show Time As: Busy

Required Attendees: patricia.m.underwood.civ@mail.mil; maria.vargas@navy.mil; wanda.holmes@navy.mil; freeman.holifield.mil@mail.mil; andrew.rak@noblis.org; andrew.rak2.ctr@mail.mil; mark.s.johnson.civ@mail.mil; jennifer.corack@navy.mil; Anita.K.Meyer@usace.army.mil; james.s.smith454.civ@mail.mil; barry.marcel@us.af.mil; Sandra.Howard@hhs.gov; Suzanne_Fitzpatrick; Jason.Aungst@fda.hhs.gov; Penelope.Rice@fda.hhs.gov; Paul.South@fda.hhs.gov; wic1@cdc.gov; txf5@cdc.gov; pjb7@cdc.gov; Christopher.Weis@nih.gov; miller.aubrey@nih.gov; suzanne.fenton@nih.gov; michael.devito@nih.gov; birnbaumls@niehs.nih.gov; fjh1@cdc.gov; seg3@cdc.gov; eaw0@cdc.gov; iwa6@cdc.gov; oii2@cdc.gov; pxp5@cdc.gov; linda.s.wennerberg@nasa.gov; James_H_Kim Ex. 6 Personal Privacy (PP); mfocazio@usgs.gov; Terra.irons@va.gov; Mclain, Jennifer; Holsinger, Hannah; Wadlington, Christina; Tiago, Joseph; Burneson, Eric; Behl, Betsy; Strong, Jamie; Jacobs, Brittany; Donohue, Joyce; Miller, Gregory; Harper, Ashley; Drinkard, Andrea; Behrsing, Tracy; Babcock, Amy; Aubee, Catherine; Henry, Tala; Orme-Zavaleta, Jennifer; Gillespie, Andrew; Bahadori, Tina; Jones, Samantha; Lambert, Jason; Lavoie, Emma; Owens, Beth; Moore, Alexa; Champlin, Anna; Rodan, Bruce; Mattas-Curry, Lahne; Raffaele, Kathleen; Gervais, Gregory; Leonard, Paul; Soares, Barbara; Speth, Thomas; Lehman, Rachel; michael.j.quinn104.civ@mail.mil; Birchfield, Norman
Optional Attendees: Albert, Ryan; Foster, Stiven; Libelo, Laurence; Cooke, Maryt; Burchette, John; Davis, Todd H.

Agenda: PFAS Toxicity Development Updates

1) Introduction and general questions re process and reviewers (10 min)
2) GenX chemicals assessment (20 min)
3) PFBS assessment (30 min)
4) Charge questions (30 min)

Appointment

From: Grevatt, Peter [Grevatt.Peter@epa.gov]
Sent: 5/3/2018 5:54:16 PM
To: Grevatt, Peter [Grevatt.Peter@epa.gov]; patricia.m.underwood.civ@mail.mil; maria.vargas@navy.mil; greg.berry@navy.mil; freeman.holifield.mil@mail.mil; andrew.rak@noblis.org; andrew.rak2.ctr@mail.mil; mark.s.johnson.civ@mail.mil; Sandra Howard [Sandra.Howard@HHS.GOV]; Suzanne_Fitzpatrick [Suzanne.Fitzpatrick@fda.hhs.gov]; Jason.Aungst@fda.hhs.gov; Penelope.Rice@fda.hhs.gov; wic1@cdc.gov; txf5@cdc.gov; pjb7@cdc.gov; Christopher.Weis@nih.gov; miller.aubrey@nih.gov; suzanne.fenton@nih.gov; fjh1@cdc.gov; pxp5@cdc.gov; linda.s.wennerberg@nasa.gov; Kim@Ex. 6 Personal Privacy (PP); Mclain, Jennifer [Mclain.Jennifer@epa.gov]; Holsinger, Hannah [Holsinger.Hannah@epa.gov]; Wadlington, Christina [Wadlington.Christina@epa.gov]; Tiago, Joseph [Tiago.Joseph@epa.gov]; Burneson, Eric [Burneson.Eric@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Harper, Ashley [harper.ashley@epa.gov]; Drinkard, Andrea [Drinkard.Andrea@epa.gov]; Behrsing, Tracy [behrsing.tracy@epa.gov]; Babcock, Amy [babcock.amy@epa.gov]; Aubee, Catherine [Aubee.Catherine@epa.gov]; Henry, Tala [Henry.Tala@epa.gov]; Orme-Zavaleta, Jennifer [Orme-Zavaleta.Jennifer@epa.gov]; Gillespie, Andrew [Gillespie.Andrew@epa.gov]; Bahadori, Tina [Bahadori.Tina@epa.gov]; Jones, Samantha [Jones.Samantha@epa.gov]; Lambert, Jason [Lambert.Jason@epa.gov]; Lavoie, Emma [Lavoie.Emma@epa.gov]; Owens, Beth [Owens.Beth@epa.gov]; Moore, Alexa [moore.alexa@epa.gov]; Champlin, Anna [Champlin.Anna@epa.gov]; Rodan, Bruce [rodan.bruce@epa.gov]; Mattas-Curry, Lahne [Mattas-Curry.Lahne@epa.gov]; Raffaele, Kathleen [raffaele.kathleen@epa.gov]; Gervais, Gregory [Gervais.Gregory@epa.gov]; Leonard, Paul [leonard.paul@epa.gov]; michael.devito@nih.gov; Paul.South@fda.hhs.gov; seg3@cdc.gov; jennifer.corack@navy.mil; Anita.K.Meyer@usace.army.mil; james.s.smith454.civ@mail.mil; Soares, Barbara [soares.barbara@epa.gov]; Speth, Thomas [Speth.Thomas@epa.gov]; birnbaumls@niehs.nih.gov; barry.marcel@us.af.mil; mfocazio@usgs.gov; James_H_KimEx. 6 Personal Privacy (PP) Lehman, Rachel [lehman.rachel@epa.gov]

Subject: PFAS Toxicity Discussion-Federal Briefing #2 Part 2-PFBS Presentation
Attachments: ECOS FED PART GENX PFBS PRESENTATION 4.27.18A.PDF; charge questions genx pfbs 04 23 18.docx; Updated federal partner engagement schedule 5-3-18.docx
Location: Webinar - Call in information and Webinar link will be provided shortly

Start: 5/4/2018 3:00:00 PM
End: 5/4/2018 4:00:00 PM
Show Time As: Busy

Required Attendees: patricia.m.underwood.civ@mail.mil; maria.vargas@navy.mil; greg.berry@navy.mil; freeman.holifield.mil@mail.mil; andrew.rak@noblis.org; andrew.rak2.ctr@mail.mil; mark.s.johnson.civ@mail.mil; Sandra.Howard@hhs.gov; Suzanne_Fitzpatrick; Jason.Aungst@fda.hhs.gov; Penelope.Rice@fda.hhs.gov; wic1@cdc.gov; txf5@cdc.gov; pjb7@cdc.gov; Christopher.Weis@nih.gov; miller.aubrey@nih.gov; suzanne.fenton@nih.gov; fjh1@cdc.gov; pxp5@cdc.gov; linda.s.wennerberg@nasa.gov; Kim@Ex. 6 Personal Privacy (PP) Grevatt, Peter; Mclain, Jennifer; Holsinger, Hannah; Wadlington, Christina; Tiago, Joseph; Burneson, Eric; Behl, Betsy; Strong, Jamie; Jacobs, Brittany; Donohue, Joyce; Miller, Gregory; Harper, Ashley; Drinkard, Andrea; Behrsing, Tracy; Babcock, Amy; Aubee, Catherine; Henry, Tala; Orme-Zavaleta, Jennifer; Gillespie, Andrew; Bahadori, Tina; Jones, Samantha; Lambert, Jason; Lavoie, Emma; Owens, Beth; Moore, Alexa; Champlin, Anna; Rodan, Bruce; Mattas-Curry, Lahne; Raffaele, Kathleen; Gervais, Gregory; Leonard, Paul; michael.devito@nih.gov; Paul.South@fda.hhs.gov; seg3@cdc.gov; jennifer.corack@navy.mil; Anita.K.Meyer@usace.army.mil; james.s.smith454.civ@mail.mil; Soares, Barbara; Speth, Thomas; birnbaumls@niehs.nih.gov; barry.marcel@us.af.mil; mfocazio@usgs.gov; James_H_KimEx. 6 Personal Privacy (PP) Lehman, Rachel

Please see updated schedule and draft peer review charge questions

Adobe connect: Ex. 6 Personal Privacy (PP)
Call in #: +1 (202

Conference ID: 1 Ex. 6 Personal Privacy (PP)

Appointment

From: Villeneuve, Dan [Villeneuve.Dan@epa.gov]
Sent: 9/12/2018 2:35:57 PM
To: Villeneuve, Dan [Villeneuve.Dan@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]; Hines, Ronald [Hines.Ronald@epa.gov]; Abedini, Jaleh [abedini.jaleh@epa.gov]; Angrish, Michelle [Angrish.Michelle@epa.gov]; Ankley, Gerald [Ankley.Gerald@epa.gov]; Barron, Mace [Barron.Mace@epa.gov]; Biales, Adam [Biales.Adam@epa.gov]; Blackwell, Brett [Blackwell.Brett@epa.gov]; Botteri, Nicole [Botteri.Nicole@epa.gov]; Carleton, Jim [Carleton.Jim@epa.gov]; Carswell, Gleta [Carswell.Gleta@epa.gov]; Cavallin, Jenna [Cavallin.Jenna@epa.gov]; Cheng, Wan-Yun [Cheng.Wan-Yun@epa.gov]; Chorley, Brian [Chorley.Brian@epa.gov]; Collette, Tim [Collette.Tim@epa.gov]; Conley, Justin [Conley.Justin@epa.gov]; Conolly, Rory [Conolly.Rory@epa.gov]; Corton, Chris [Corton.Chris@epa.gov]; Degitz, Sigmund [Degitz.Sigmund@epa.gov]; Doering, Jonathon [doering.jonathon@epa.gov]; Edwards, Stephen [Edwards.Stephen@epa.gov]; Ekman, Drew [Ekman.Drew@epa.gov]; El-Masri, Hisham [El-Masri.Hisham@epa.gov]; Fay, Kellie [Fay.Kellie@epa.gov]; Franzosa, Jill [Franzosa.Jill@epa.gov]; Fry, Meridith [Fry.Meridith@epa.gov]; Ge, Yue [Ge.Yue@epa.gov]; Gessner, Lauren [gessner.lauren@epa.gov]; Gilbert, Mary E. [Gilbert.Mary@epa.gov]; Gray, Earl [Gray.Earl@epa.gov]; Haselman, Jon [Haselman.Jon@epa.gov]; Hassan, Iman [Hassan.Iman@epa.gov]; Hazari, Mehdi [Hazari.Mehdi@epa.gov]; Herr, David [Herr.David@epa.gov]; Hester, Susan [Hester.Susan@epa.gov]; Hill, Thomas [hill.thomas@epa.gov]; Hines, David [hines.david@epa.gov]; Hornung, Michael [Hornung.Michael@epa.gov]; Hubal, Elaine [Hubal.Elaine@epa.gov]; Hughes, MichaelF [Hughes.MichaelF@epa.gov]; Hunter, Sid [Hunter.Sid@epa.gov]; Ives, Cataia [Ives.Cataia@epa.gov]; Jarabek, Annie [Jarabek.Annie@epa.gov]; Jensen, Kathleen [Jensen.Kathleen@epa.gov]; Jeremy Leonard [jaleonar@ncsu.edu]; Joachim Pleil [Pleil@unc.edu]; Judson, Richard [Judson.Richard@epa.gov]; Kahl, Michael [Kahl.Michael@epa.gov]; Kenyon, Elaina [Kenyon.Elaina@epa.gov]; Klinefelter, Gary [Klinefelter.Gary@epa.gov]; Kodavanti, Prasada Rao [Kodavanti.Prasada@epa.gov]; Korte, Joe [Korte.Joe@epa.gov]; Kosian, Pat [Kosian.Pat@epa.gov]; LaLone, Carlie [lalone.carlie@epa.gov]; Laws, Susan [Laws.Susan@epa.gov]; Leonard, Jeremy [Leonard.Jeremy@epa.gov]; Lyons, David [Lyons.David@epa.gov]; Miller, David [Miller.DavidJ@epa.gov]; Miller-Dykeman, Ashley [miller-dykeman.ashley@epa.gov]; Mills, Lesley [Mills.Lesley@epa.gov]; Mills, Marc [mills.marc@epa.gov]; Mortensen, Holly [Mortensen.Holly@epa.gov]; Moser, Ginger [Moser.Ginger@epa.gov]; Nelms, Mark [Nelms.Mark@epa.gov]; Nelson, Gail [Nelson.Gail@epa.gov]; Nelson, Garret [Nelson.Garret@epa.gov]; Olker, Jennifer [olker.jennifer@epa.gov]; OShaughnessy, Katie [OShaughnessy.Katie@epa.gov]; Phillips, Katherine [Phillips.Katherine@epa.gov]; Pittman, Maureen [Pittman.Maureen@epa.gov]; Pleil, Joachim [Pleil.Joachim@epa.gov]; Ramasamy, Santhini [Ramasamy.Santhini@epa.gov]; Scatterday, Allysan [scatterday.allysan@epa.gov]; Schreinemachers, Dina [Schreinemachers.Dina@epa.gov]; Simmons, Jane [Simmons.Jane@epa.gov]; Stoker, Tammy [Stoker.Tammy@epa.gov]; Suarez, Samuel [Suarez.Samuel@epa.gov]; Suen, Alisa [suen.alisa@epa.gov]; Tal, Tamara [Tal.Tamara@epa.gov]; Tan, Cecilia [Tan.Cecilia@epa.gov]; Teng, Quincy [Teng.Quincy@epa.gov]; Thai, Sheau-Fung [Thai.Sheau-Fung@epa.gov]; VanEmon, Jeanette [VanEmon.Jeanette@epa.gov]; Veronesi, Bellina [Veronesi.Bellina@epa.gov]; Wang, Rong-Lin [Wang.Rong-Lin@epa.gov]; Wehmas, Leah [wehmas.leah@epa.gov]; Wilson, Vickie [Wilson.Vickie@epa.gov]; Frithsen, Jeff [Frithsen.Jeff@epa.gov]; Cowden, John [Cowden.John@epa.gov]; Tietge, Joe [Tietge.Joe@epa.gov]

Subject: FW: CSS AOPDD Webinar - Conley - GenX effects in rats
Location: dial: Ex. 6 Personal Privacy (PP)

Start: 9/18/2018 7:00:00 PM
End: 9/18/2018 7:45:00 PM
Show Time As: Busy

-----Original Appointment-----
From: Villeneuve, Dan
Sent: Thursday, September 06, 2018 7:31 PM
To: Villeneuve, Dan; Strong, Jamie; Hines, Ronald; Abedini, Jaleh; Angrish, Michelle; Ankley, Gerald; Barron, Mace; Biales,

Adam; Blackwell, Brett; Botteri, Nicole; Carleton, Jim; Carswell, Gleta; Cavallin, Jenna; Cheng, Wan-Yun; Chorley, Brian; Collette, Tim; Conley, Justin; Conolly, Rory; Corton, Chris; Degitz, Sigmund; Doering, Jonathon; Edwards, Stephen; Ekman, Drew; El-Masri, Hisham; Fay, Kellie; Franzosa, Jill; Fry, Meridith; Ge, Yue; Gessner, Lauren; Gilbert, Mary E.; Gray, Earl; Haselman, Jon; Hassan, Iman; Hazari, Mehdi; Herr, David; Hester, Susan; Hill, Thomas; Hines, David; Hornung, Michael; Hubal, Elaine; Hughes, MichaelF; Hunter, Sid; Ives, Cataia; Jarabek, Annie; Jensen, Kathleen; Jeremy Leonard; Joachim Pleil; Judson, Richard; Kahl, Michael; Kenyon, Elaina; Klinefelter, Gary; Kodavanti, Prasada Rao; Korte, Joe; Kosian, Pat; LaLone, Carlie; Laws, Susan; Leonard, Jeremy; Lyons, David; Miller, David; Miller-Dykeman, Ashley; Mills, Lesley; Mills, Marc; Mortensen, Holly; Moser, Ginger; Nelms, Mark; Nelson, Gail; Nelson, Garret; Olker, Jennifer; OShaughnessy, Katie; Phillips, Katherine; Pittman, Maureen; Pleil, Joachim; Ramasamy, Santhini; Scatterday, Allysan; Schreinemachers, Dina; Simmons, Jane; Stoker, Tammy; Suarez, Samuel; Suen, Alisa; Tal, Tamara; Tan, Cecilia; Teng, Quincy; Thai, Sheau-Fung; VanEmon, Jeanette; Veronesi, Bellina; Wang, Rong-Lin; Wehmas, Leah; Wilson, Vickie; Frithsen, Jeff; Cowden, John; Tietge, Joe
Subject: Fwd: CSS AOPDD Webinar - Conley - GenX effects in rats
When: Tuesday, September 18, 2018 2:00 PM-2:45 PM (UTC-06:00) Central Time (US & Canada).
Where: dial: Ex. 6 Personal Privacy (PP)

FYI.
Earl

Sent from my iPhone

Begin forwarded message:

> **From:** "Villeneuve, Dan" <Villeneuve.Dan@epa.gov>
> **To:** "Abedini, Jaleh" <abedini.jaleh@epa.gov>, "Angrish, Michelle" <Angrish.Michelle@epa.gov>, "Ankley, Gerald" <Ankley.Gerald@epa.gov>, "Barron, Mace" <Barron.Mace@epa.gov>, "Biales, Adam" <Biales.Adam@epa.gov>, "Blackwell, Brett" <Blackwell.Brett@epa.gov>, "Botteri, Nicole" <Botteri.Nicole@epa.gov>, "Carleton, Jim" <Carleton.Jim@epa.gov>, "Carswell, Gleta" <Carswell.Gleta@epa.gov>, "Cavallin, Jenna" <Cavallin.Jenna@epa.gov>, "Cheng, Wan-Yun" <Cheng.Wan-Yun@epa.gov>, "Chorley, Brian" <Chorley.Brian@epa.gov>, "Collette, Tim" <Collette.Tim@epa.gov>, "Conley, Justin" <Conley.Justin@epa.gov>, "Conolly, Rory" <Conolly.Rory@epa.gov>, "Corton, Chris" <Corton.Chris@epa.gov>, "Degitz, Sigmund" <Degitz.Sigmund@epa.gov>, "Doering, Jonathon" <doering.jonathon@epa.gov>, "Edwards, Stephen" <Edwards.Stephen@epa.gov>, "Ekman, Drew" <Ekman.Drew@epa.gov>, "El-Masri, Hisham" <El-Masri.Hisham@epa.gov>, "Fay, Kellie" <Fay.Kellie@epa.gov>, "Franzosa, Jill" <Franzosa.Jill@epa.gov>, "Fry, Meridith" <Fry.Meridith@epa.gov>, "Ge, Yue" <Ge.Yue@epa.gov>, "Gessner, Lauren" <gessner.lauren@epa.gov>, "Gilbert, Mary E." <Gilbert.Mary@epa.gov>, "Gray, Earl" <Gray.Earl@epa.gov>, "Haselman, Jon" <Haselman.Jon@epa.gov>, "Hassan, Iman" <Hassan.Iman@epa.gov>, "Hazari, Mehdi" <Hazari.Mehdi@epa.gov>, "Herr, David" <Herr.David@epa.gov>, "Hester, Susan" <Hester.Susan@epa.gov>, "Hill, Thomas" <hill.thomas@epa.gov>, "Hines, David" <hines.david@epa.gov>, "Hornung, Michael" <Hornung.Michael@epa.gov>, "Hubal, Elaine" <Hubal.Elaine@epa.gov>, "Hughes, MichaelF" <Hughes.MichaelF@epa.gov>, "Hunter, Sid" <Hunter.Sid@epa.gov>, "Ives, Cataia" <Ives.Cataia@epa.gov>, "Jarabek, Annie" <Jarabek.Annie@epa.gov>, "Jensen, Kathleen" <Jensen.Kathleen@epa.gov>, "Jeremy Leonard" <jaleonar@ncsu.edu>, "Joachim Pleil" <Pleil@unc.edu>, "Judson, Richard" <Judson.Richard@epa.gov>, "Kahl, Michael" <Kahl.Michael@epa.gov>, "Kenyon, Elaina" <Kenyon.Elaina@epa.gov>, "Klinefelter, Gary" <Klinefelter.Gary@epa.gov>, "Kodavanti, Prasada Rao" <Kodavanti.Prasada@epa.gov>, "Korte, Joe" <Korte.Joe@epa.gov>, "Kosian, Pat" <Kosian.Pat@epa.gov>, "LaLone, Carlie" <lalone.carlie@epa.gov>, "Laws, Susan" <Laws.Susan@epa.gov>, "Leonard, Jeremy" <Leonard.Jeremy@epa.gov>, "Lyons, David" <Lyons.David@epa.gov>, "Miller, David" <Miller.DavidJ@epa.gov>, "Miller-Dykeman, Ashley" <miller-dykeman.ashley@epa.gov>, "Mills, Lesley" <Mills.Lesley@epa.gov>, "Mills, Marc" <mills.marc@epa.gov>, "Mortensen, Holly" <Mortensen.Holly@epa.gov>, "Moser, Ginger"

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Subject: CSS AOPDD Webinar - Conley - GenX effects in rats

Adverse maternal, fetal, and postnatal effects of oral gestational exposure to hexafluoropropylene oxide dimer acid (GenX) in Sprague-Dawley rats

[cid:image003.jpg@01D445FB.13A252E0]

Presenter: Dr. Justin Conley, Ph.D., NHEERL, Toxicity Assessment Division, Research Triangle Park, NC

Tuesday, September 18, 2018
3:00-3:45 PM Eastern (2:00-2:45 Central)

Dial-in: Ex. 6 Personal Privacy (PP)
Conf ID:
Adobe Connect URL: Ex. 6 Personal Privacy (PP)

If you encounter a busy signal when dialing in, try one of the alternative numbers found here: Ex. 6 Personal Privacy (PP)

Appointment

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Sent: 9/6/2018 9:37:44 PM
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Subject: PFAS Toxicity Assessment Discussion-Federal
Attachments: PFBS_Public Comment Draft_REDLINE for Federal Agencies_9-10-18.pdf; PUBLIC COMMENT DRAFT Human Health Tox Values for GenX Chemicals_09_10_2018 REDLINE.pdf
Location: EPA WJC East 2123 - Call In Number: Ex. 6 Personal Privacy (PP)

Start: 9/13/2018 1:00:00 PM
End: 9/13/2018 2:30:00 PM
Show Time As: Busy

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Leonard, Paul; Foster, Stiven; Libelo, Laurence; Soares, Barbara; Lehman, Rachel; Murphy, Elizabeth; Lan, Alexis; Albert, Ryan

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Agenda:

1) Brief review of process to date
2) Discussion of text in two draft documents related to impacts on the thyroid
3) Identification and discussion of other topics of primary interest to federal partners
4) Next steps related to messaging and posting of documents for public review and comment

Appointment

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Subject: PFAS Toxicity Discussion-Federal Briefing #2
Attachments: ECOS FED PART GENX PFBS PRESENTATION 4.27.18A.pdf
Location: 2123 EPA East - Peter Grevatt's conference line - Ex. 6 Personal Privacy (PP)

Start: 5/2/2018 7:00:00 PM
End: 5/2/2018 8:30:00 PM
Show Time As: Busy

Required Attendees: patricia.m.underwood.civ@mail.mil; maria.vargas@navy.mil; greg.berry@navy.mil; freeman.holifield.mil@mail.mil; andrew.rak@noblis.org; andrew.rak2.ctr@mail.mil; mark.s.johnson.civ@mail.mil; Sandra.Howard@hhs.gov; Suzanne_Fitzpatrick; Jason.Aungst@fda.hhs.gov; Penelope.Rice@fda.hhs.gov; wic1@cdc.gov; txf5@cdc.gov; pjb7@cdc.gov; Christopher.Weis@nih.gov; miller.aubrey@nih.gov; suzanne.fenton@nih.gov; fjh1@cdc.gov; pxp5@cdc.gov; linda.s.wennerberg@nasa.gov; Jim.kim Ex. 6 Personal Privacy (PP) Mclain, Jennifer; Holsinger, Hannah; Wadlington, Christina; Tiago, Joseph; Burneson, Eric; Behl, Betsy; Strong, Jamie; Jacobs, Brittany; Donohue, Joyce; Miller, Gregory; Harper, Ashley; Drinkard, Andrea; behrsing.tracy@epa.gov; Babcock, Amy; Aubee, Catherine; Henry, Tala; Orme-Zavaleta, Jennifer; Gillespie, Andrew; Bahadori, Tina; Jones, Samantha; Lambert, Jason; Lavoie, Emma; Owens, Beth; Moore, Alexa; Champlin, Anna; Rodan, Bruce; Mattas-Curry, Lahne; Raffaele, Kathleen; Gervais, Gregory; Leonard, Paul; James H; James_H_Kim Ex. 6 Personal Privacy (PP) ; Devito, Michael (NIH/NIEHS) [E]
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Adobe Connect Link: h Ex. 6 Personal Privacy (PP)
Meeting materials will be provided prior to the meeting.

Provided are links to chemical-specific pages for the studies cited:

GenX: https://hero.epa.gov/hero/index.cfm/project/page/project_id/2627
PFBS: https://hero.epa.gov/hero/index.cfm/project/page/project_id/2610

Appointment

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Subject: PFAS Toxicity Assessment Discussion-Federal
Attachments: Peer Review Report_Task 0008_GenX_Final_7-25-18.pdf; Peer Review Report_Task 0008_PFBS_Final.pdf; PFAS stakeholder briefing_PFBS and GenX Chemicals_8-27-18_Final.pptx
Location: DCRoomEast2123/DC-ICC-OW-OGWDW - 2 Ex. 6 Personal Privacy (PP)

Start: 8/27/2018 1:00:00 PM
End: 8/27/2018 2:30:00 PM
Show Time As: Busy

Required Attendees: patricia.m.underwood.civ@mail.mil; maria.vargas@navy.mil; wanda.holmes@navy.mil; freeman.holifield.mil@mail.mil; andrew.rak@noblis.org; andrew.rak2.ctr@mail.mil; mark.s.johnson.civ@mail.mil; jennifer.corack@navy.mil; Anita.K.Meyer@usace.army.mil; james.s.smith454.civ@mail.mil; barry.marcel@us.af.mil; Sandra.Howard@hhs.gov; Suzanne_Fitzpatrick; Jason.Aungst@fda.hhs.gov; Penelope.Rice@fda.hhs.gov; Paul.South@fda.hhs.gov; wic1@cdc.gov; txf5@cdc.gov; pjb7@cdc.gov; Christopher.Weis@nih.gov; miller.aubrey@nih.gov; suzanne.fenton@nih.gov; michael.devito@nih.gov; birnbaumls@niehs.nih.gov; fjh1@cdc.gov; seg3@cdc.gov; eaw0@cdc.gov; iwa6@cdc.gov; oii2@cdc.gov; pxp5@cdc.gov; linda.s.wennerberg@nasa.gov; James_H_Kim Ex. 6 Personal Privacy (PP) mfocazio@usgs.gov; Terra.irons@va.gov; Grevatt, Peter; Mclain, Jennifer; Holsinger, Hannah; Wadlington, Christina; Tiago, Joseph; Burneson, Eric; Behl, Betsy; Strong, Jamie; Jacobs, Brittany; Donohue, Joyce; Miller, Gregory; Harper, Ashley; Drinkard, Andrea; Babcock, Amy; Aubee, Catherine; Henry, Tala; Orme-Zavaleta, Jennifer; Gillespie, Andrew; Bahadori, Tina; Jones, Samantha; Lambert, Jason;

Lavoie, Emma; Owens, Beth; Moore, Alexa; Champlin, Anna; Rodan, Bruce; Mattas-Curry, Lahne; Raffaele, Kathleen; Gervais, Gregory; Leonard, Paul; Foster, Stiven; Libelo, Laurence; Soares, Barbara; Lehman, Rachel; Albert, Ryan; Murphy, Elizabeth; Lan, Alexis

Optional Attendees: Burchette, John; Baier-Anderson, Caroline; Cooke, Maryt; Birchfield, Norman; Moore, Beth; Putzrath, Resha M CIV USN NAVMCPUBHLTHCEN PORS (US); Margo_Schwab@omb.eop.gov; Speth, Thomas; Vlad Dorjets Ex. 6 Personal Privacy (PP); Jones, Danielle Y. EOP/OMB; Barringer, Jody M. EOP/OMB; Gamache, Christopher D. EOP/OMB

Adobe Connect: Ex. 6 Personal Privacy (PP)

Appointment

From: Strong, Jamie [Strong.Jamie@epa.gov]
Sent: 12/6/2018 8:23:14 PM
To: Strong, Jamie [Strong.Jamie@epa.gov]; Jones, Samantha [Jones.Samantha@epa.gov]; Lambert, Jason [Lambert.Jason@epa.gov]; Owens, Beth [Owens.Beth@epa.gov]; Champlin, Anna [Champlin.Anna@epa.gov]; Bahadori, Tina [Bahadori.Tina@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Flaherty, Colleen [Flaherty.Colleen@epa.gov]; Harper, Ashley [harper.ashley@epa.gov]; Drinkard, Andrea [Drinkard.Andrea@epa.gov]; Grevatt, Peter [Grevatt.Peter@epa.gov]; Wadlington, Christina [Wadlington.Christina@epa.gov]; Mattas-Curry, Lahne [Mattas-Curry.Lahne@epa.gov]; Nagle, Deborah [Nagle.Deborah@epa.gov]; Holsinger, Hannah [Holsinger.Hannah@epa.gov]; Brinkerhoff, Chris [Brinkerhoff.Chris@epa.gov]; Soares, Barbara [soares.barbara@epa.gov]; Benson, Amy [Benson.Amy@epa.gov]; Burneson, Eric [Burneson.Eric@epa.gov]; Babcock, Amy [babcock.amy@epa.gov]; Henry, Tala [Henry.Tala@epa.gov]; Albert, Ryan [Albert.Ryan@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]; Mclain, Jennifer [Mclain.Jennifer@epa.gov]; Lalley, Cara [Lalley.Cara@epa.gov]
CC: Ross, David P [ross.davidp@epa.gov]; Penman, Crystal [Penman.Crystal@epa.gov]

Subject: GenX chemicals and PFBS celebration
Location: Occidental Grill

Start: 12/12/2018 9:00:00 PM
End: 12/12/2018 11:30:00 PM
Show Time As: Tentative

Required Attendees: Jones, Samantha; Lambert, Jason; Owens, Beth; Champlin, Anna; Bahadori, Tina; Jacobs, Brittany; Miller, Gregory; Behl, Betsy; Flaherty, Colleen; Lalley, Cara; Harper, Ashley; Drinkard, Andrea; Grevatt, Peter; Wadlington, Christina; Mattas-Curry, Lahne; Nagle, Deborah; Holsinger, Hannah; Brinkerhoff, Chris; Soares, Barbara; Benson, Amy; Burneson, Eric; Babcock, Amy; Henry, Tala; Albert, Ryan; Donohue, Joyce; Mclain, Jennifer
Optional Attendees: Penman, Crystal; Ross, David P

Join us to celebrate the release of the GenX and PFBS assessments!

Occidental Grill (next to the Willard)
1475 Pennsylvania, Ave., NW, Washington, DC 20004

http://www.occidentaldc.com

Appointment

From: Grevatt, Peter [Grevatt.Peter@epa.gov]
Sent: 3/1/2018 2:38:10 PM
To: Grevatt, Peter [Grevatt.Peter@epa.gov]; patricia.m.underwood.civ@mail.mil; Sandra Howard [Sandra.Howard@HHS.GOV]; cibulas william (ATSDR/OA/OD [wic1@cdc.gov]; christopher.weis@nih.gov; fjh1@CDC.Gov; linda.s.wennerberg@nasa.gov; Mclain, Jennifer [Mclain.Jennifer@epa.gov]; Holsinger, Hannah [Holsinger.Hannah@epa.gov]; Wadlington, Christina [Wadlington.Christina@epa.gov]; Tiago, Joseph [Tiago.Joseph@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Behrsing, Tracy [behrsing.tracy@epa.gov]; Babcock, Amy [babcock.amy@epa.gov]; Aubee, Catherine [Aubee.Catherine@epa.gov]; Henry, Tala [Henry.Tala@epa.gov]; Orme-Zavaleta, Jennifer [Orme-Zavaleta.Jennifer@epa.gov]; Gillespie, Andrew [Gillespie.Andrew@epa.gov]; Bahadori, Tina [Bahadori.Tina@epa.gov]; Jones, Samantha [Jones.Samantha@epa.gov]; Lambert, Jason [Lambert.Jason@epa.gov]; Lavoie, Emma [Lavoie.Emma@epa.gov]; Sinks, Tom [Sinks.Tom@epa.gov]; Rodan, Bruce [rodan.bruce@epa.gov]; Mattas-Curry, Lahne [Mattas-Curry.Lahne@epa.gov]; Harper, Ashley [harper.ashley@epa.gov]; Burneson, Eric [Burneson.Eric@epa.gov]; miller.aubrey@nih.gov
CC: Owens, Beth [Owens.Beth@epa.gov]; Protzel Berman, Pamela (CDC/ONDIEH/NCEH) [pxp5@cdc.gov]; Holifield, Freeman Jr Lt Col USAF SAF-IE (US) [freeman.holifield.mil@mail.mil]; Rak, Drew [andrew.rak@noblis.org]; Drinkard, Andrea [Drinkard.Andrea@epa.gov]; Raffaele, Kathleen [raffaele.kathleen@epa.gov]; greg.berry@navy.mil; Vargas, Maria A CIV NAVFAC Washington [maria.vargas@navy.mil]; Johnson, Mark S CIV USARMY MEDCOM APHC (US) [mark.s.johnson.civ@mail.mil]; Suzanne_Fitzpatrick [Suzanne.Fitzpatrick@fda.hhs.gov]; Aungst, Jason [Jason.Aungst@fda.hhs.gov]; Rice, Penelope [Penelope.Rice@fda.hhs.gov]; Fenton, Suzanne (NIH/NIEHS) [E] [suzanne.fenton@nih.gov]; Leonard, Paul [leonard.paul@epa.gov]; Gervais, Gregory [Gervais.Gregory@epa.gov]; Rak, Andrew (Drew) CTR OSD OUSD ATL (US) [andrew.rak2.ctr@mail.mil]; Forrester, Tina (ATSDR/DCHI/OD) [txf5@cdc.gov]; jim.kim Ex. 6 Personal Privacy (PP) Breysse, Patrick N. (CDC/ONDIEH/NCEH) [pjb7@cdc.gov]

Subject: PFAS Toxicity Discussion - Federal
Attachments: ECOS FED PART GENX PFBS PRESENTATION 03 06 18.pptx; PFBS BIBLIO 03 02 18.docx; GENX BIBLIO 03 02 18.docx
Location: DCRoomEast2123/DC-ICC-OW-OGWDW Ex. 6 Personal Privacy (PP)

Start: 3/9/2018 7:30:00 PM
End: 3/9/2018 8:30:00 PM
Show Time As: Tentative

Required Attendees: patricia.m.underwood.civ@mail.mil; Howard, Sandra (OS/OASH); cibulas william (ATSDR/OA/OD; christopher.weis@nih.gov; fjh1@CDC.Gov; linda.s.wennerberg@nasa.gov; Mclain, Jennifer; Holsinger, Hannah; Wadlington, Christina; Tiago, Joseph; Behl, Betsy; Strong, Jamie; Jacobs, Brittany; Donohue, Joyce; Miller, Gregory; Behrsing, Tracy; Babcock, Amy; Aubee, Catherine; Henry, Tala; Orme-Zavaleta, Jennifer; Gillespie, Andrew; Bahadori, Tina (Bahadori.Tina@epa.gov); Jones, Samantha; Lambert, Jason; Lavoie, Emma; Sinks, Tom; Rodan, Bruce; Mattas-Curry, Lahne; Harper, Ashley; Burneson, Eric; miller.aubrey@nih.gov
Optional Attendees: Owens, Beth; Protzel Berman, Pamela (CDC/ONDIEH/NCEH); Holifield, Freeman Jr Lt Col USAF SAF-IE (US); Breysse, Patrick N. (CDC/ONDIEH/NCEH); Rak, Drew; Drinkard, Andrea; Raffaele, Kathleen; greg.berry@navy.mil; Vargas, Maria A CIV NAVFAC Washington; Johnson, Mark S CIV USARMY MEDCOM APHC (US); Suzanne_Fitzpatrick; Aungst, Jason; Rice, Penelope; Fenton, Suzanne (NIH/NIEHS) [E]; Leonard, Paul; Gregory Gervais (Gervais.Gregory@epa.gov); Rak, Andrew (Drew) CTR OSD OUSD ATL (US); Forrester, Tina (ATSDR/DCHI/OD); jim.kim Ex. 6 Personal Privacy (PP)

Adobe Connect Link: Ex. 6 Personal Privacy (PP)

Please note that non EPA participants may come in person as well as Adobe Connect. If you are coming to the meeting in person, inform Hannah at your earliest convenience so that she can provide a list to EPA's security staff. Please enter EPA at the 1201 Constitution Avenue, NW entrance and make sure that you have a valid photo ID. After you complete your security clearance, have the guard call Paula at 564-3773 to be escorted to conference room 2123.

Appointment

From: Euling, Susan [Euling.Susan@epa.gov]
Sent: 4/26/2021 1:49:02 PM
To: Euling, Susan [Euling.Susan@epa.gov]; DAnglada, Lesley [DAnglada.Lesley@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]; Akhter, Shamima [Akhter.Shamima@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]; Soares, Barbara [soares.barbara@epa.gov]; Lindberg, Casey [Lindberg.Casey@epa.gov]; Ravenscroft, John [Ravenscroft.John@epa.gov]; Young, Melanie [Young.Melanie@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Cunningham, Kelly [cunningham.kelly@epa.gov]; Keel, Adrienne [keel.adrienne@epa.gov]

Subject: HRAB check in
Attachments: Untitled Attachment; Untitled Attachment; Untitled Attachment; Untitled Attachment; Untitled Attachment; Untitled Attachment; Canceled: HRAB check in; Untitled Attachment; Untitled Attachment; Untitled Attachment; Untitled Attachment; Untitled Attachment; Untitled Attachment; Canceled: HRAB check in; Untitled Attachment; Untitled Attachment; Untitled Attachment; Untitled Attachment; Untitled Attachment; Untitled Attachment
Location: Microsoft Teams Meeting

Start: 4/27/2021 3:30:00 PM
End: 4/27/2021 4:00:00 PM
Show Time As: Busy

Recurrence: Weekly
every Tuesday from 11:30 AM to 12:00 PM
Required Attendees: DAnglada, Lesley; Miller, GregoryG; Akhter, Shamima; Donohue, Joyce; Soares, Barbara; Lindberg, Casey; Ravenscroft, John; Young, Melanie; Jacobs, Brittany; Cunningham, Kelly; Keel, Adrienne

---

Microsoft Teams meeting

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Ex. 6 Personal Privacy (PP) d States, Washington DC
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Appointment

From: Euling, Susan [Euling.Susan@epa.gov]
Sent: 9/14/2021 7:26:34 PM
To: Euling, Susan [Euling.Susan@epa.gov]; gaz5@cdc.gov; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]; Soares, Barbara [soares.barbara@epa.gov]; hga0@cdc.gov
CC: Buser, Melanie (ATSDR/OAD/OIA) [wyf9@cdc.gov]; Ruiz, Patricia (ATSDR/DTHHS/OD) [doz8@cdc.gov]; Prussia, Andrew James (ATSDR/OAD/OIA) [xby2@cdc.gov]

Subject: ATSDR-EPA discussion of EPA's Toxicity Assessment for GenX chemicals
Attachments: 091921 EPA Final Toxicity Assessment for GenX chems briefing ATSDR DO NOT DISTRIBUTE.pdf
Location: Microsoft Teams Meeting

Start: 9/23/2021 1:00:00 PM
End: 9/23/2021 2:00:00 PM
Show Time As: Busy

Required Attendees: gaz5@cdc.gov; Jacobs, Brittany; Miller, GregoryG; Behl, Betsy; Donohue, Joyce; Soares, Barbara; Abadin, Henry (ATSDR/DTHHS/ETB)
Optional Attendees: Buser, Melanie (ATSDR/OAD/OIA); Ruiz, Patricia (ATSDR/OAD/OIA); Prussia, Andrew James (ATSDR/OAD/OIA)

This meeting will be an opportunity for ATSDR to provide verbal comments on the pre-publication version of EPA's final toxicity assessment for GenX chemicals.

We look forward to your valuable input.

We request that you please ***DO NOT DISTRIBUTE, CITE, OR QUOTE*** the briefing slides (attached) or the draft document (provided by Betsy).

Thank you.

Susan Euling, Ph.D.
Human Health Risk Assessment Branch/HECD
Office of Science and Technology, Office of Water
U.S. Environmental Protection Agency
(o) 202-566-2717
Ex. 6 Personal Privacy (PP)

Microsoft Teams meeting

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Ex. 6 Personal Privacy (PP) United States, Washington DC
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Appointment

From: Grevatt, Peter [Grevatt.Peter@epa.gov]
Sent: 3/1/2018 2:08:51 PM
To: Grevatt, Peter [Grevatt.Peter@epa.gov]; chanson@ecos.org; slongsworth@ecos.org; lpiper@ecos.org; Roberson, Alan [aroberson@asdwa.org]; Deirdre Mason [dmason@asdwa.org]; ron.falco@state.co.us; benzier@michigan.gov; ruchs@michigan.gov; sandeep.burman@state.mn.us; Freise, Clark [Clark.Freise@des.nh.gov]; Kernen, Brandon [Brandon.Kernen@des.nh.gov]; Pillsbury, Sarah [Sarah.Pillsbury@des.nh.gov]; amy.klei@epa.ohio.gov; Mclain, Jennifer [Mclain.Jennifer@epa.gov]; Holsinger, Hannah [Holsinger.Hannah@epa.gov]; Wadlington, Christina [Wadlington.Christina@epa.gov]; Tiago, Joseph [Tiago.Joseph@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Behrsing, Tracy [behrsing.tracy@epa.gov]; Babcock, Amy [babcock.amy@epa.gov]; Aubee, Catherine [Aubee.Catherine@epa.gov]; Henry, Tala [Henry.Tala@epa.gov]; Orme-Zavaleta, Jennifer [Orme-Zavaleta.Jennifer@epa.gov]; Gillespie, Andrew [Gillespie.Andrew@epa.gov]; Bahadori, Tina [Bahadori.Tina@epa.gov]; Jones, Samantha [Jones.Samantha@epa.gov]; Lambert, Jason [Lambert.Jason@epa.gov]; Lavoie, Emma [Lavoie.Emma@epa.gov]; Sinks, Tom [Sinks.Tom@epa.gov]; Harper, Ashley [harper.ashley@epa.gov]; Matthews, Lisa [Matthews.Lisa@epa.gov]; Burneson, Eric [Burneson.Eric@epa.gov]
CC: Rodan, Bruce [rodan.bruce@epa.gov]; Mattas-Curry, Lahne [Mattas-Curry.Lahne@epa.gov]; Ellingboe, Randy (MDH) [randy.ellingboe@state.mn.us]; Owens, Beth [Owens.Beth@epa.gov]; Drinkard, Andrea [Drinkard.Andrea@epa.gov]; Raffaele, Kathleen [raffaele.kathleen@epa.gov]; Bonnie.Buthker@epa.ohio.gov; Michael.Allen@epa.ohio.gov; Champlin, Anna [Champlin.Anna@epa.gov]; Carrie.Rasik@epa.ohio.gov

Subject: PFAS Toxicity Discussion - States
Attachments: ECOS FED PART GENX PFBS PRESENTATION 03 06 18.pptx; PFBS BIBLIO 03 02 18.docx; GENX BIBLIO 03 02 18.docx
Location: DCRoomEast2123/DC-ICC-OW-OGWDW Ex. 6 Personal Privacy (PP)

Start: 3/9/2018 6:00:00 PM
End: 3/9/2018 7:00:00 PM
Show Time As: Busy

Required Attendees: chanson@ecos.org; Sarah Grace Longsworth; lpiper@ecos.org; Roberson, Alan; dmason@asdwa.org; ron.falco@state.co.us; benzier@michigan.gov; ruchs@michigan.gov; sandeep.burman@state.mn.us; Freise, Clark; Kernen, Brandon; Pillsbury, Sarah; amy.klei@epa.ohio.gov; Mclain, Jennifer; Holsinger, Hannah; Wadlington, Christina; Tiago, Joseph; Behl, Betsy; Strong, Jamie; Jacobs, Brittany; Donohue, Joyce; Miller, Gregory; Behrsing, Tracy; Babcock, Amy; Aubee, Catherine; Henry, Tala; Orme-Zavaleta, Jennifer; Gillespie, Andrew; Bahadori, Tina (Bahadori.Tina@epa.gov); Jones, Samantha; Lambert, Jason; Lavoie, Emma; Sinks, Tom; Harper, Ashley; Matthews, Lisa; Burneson, Eric
Optional Attendees: Rodan, Bruce; Mattas-Curry, Lahne; Ellingboe, Randy (MDH); Owens, Beth; Drinkard, Andrea; Raffaele, Kathleen; Bonnie.Buthker@epa.ohio.gov; Michael.Allen@epa.ohio.gov; Champlin, Anna; Carrie.Rasik@epa.ohio.gov

Please note that meeting materials will be provided next week prior to the meeting.

Adobe Connect link: **Ex. 6 Personal Privacy (PP)**

Appointment

From: Strong, Jamie [Strong.Jamie@epa.gov]
Sent: 3/14/2018 6:19:50 PM
To: Strong, Jamie [Strong.Jamie@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]

Subject: GenX Study Discussion
Location: DCRoomWest5231M/DC-CCW-OST

Start: 3/15/2018 1:30:00 PM
End: 3/15/2018 3:00:00 PM
Show Time As: Busy

Required Attendees: Miller, Gregory; Jacobs, Brittany; Donohue, Joyce

Joyce,
We are getting together to talk adverse effects and need your brain…no prep necessary.

Appointment

From: Strong, Jamie [Strong.Jamie@epa.gov]
Sent: 4/5/2018 12:49:26 PM
To: Strong, Jamie [Strong.Jamie@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]

Subject: genx
Location: DCRoomWest5231M/DC-CCW-OST

Start: 4/5/2018 1:00:00 PM
End: 4/5/2018 2:00:00 PM
Show Time As: Tentative

Required Attendees: Jacobs, Brittany; Miller, Gregory; Donohue, Joyce

To discuss a few issues with study results and NOAELs/LOAELs

Message

From: Donohue, Joyce [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BB5340EC745149EDBF80D2B8B2F9B919-JDONOHUE]
Sent: 3/7/2018 6:45:10 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Henry, Tala [Henry.Tala@epa.gov]; Aubee, Catherine [Aubee.Catherine@epa.gov]; Benson, Amy [Benson.Amy@epa.gov]; Brinkerhoff, Chris [Brinkerhoff.Chris@epa.gov]; Babcock, Amy [babcock.amy@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Behrsing, Tracy [behrsing.tracy@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]; Henry, Tala [Henry.Tala@epa.gov]; Aubee, Catherine [Aubee.Catherine@epa.gov]; Benson, Amy [Benson.Amy@epa.gov]; Brinkerhoff, Chris [Brinkerhoff.Chris@epa.gov]; Babcock, Amy [babcock.amy@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Behrsing, Tracy [behrsing.tracy@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]
Subject: FW: perfluorooctanoate OR "perfluorooctanoic acid" OR - PubMed Literature search

---

From: McCune, Jennifer
Sent: Tuesday, March 06, 2018 6:47 PM
To: Rogers, Emily <rogers.emily@epa.gov>; Donohue, Joyce <Donohue.Joyce@epa.gov>
Subject: FW: perfluorooctanoate OR "perfluorooctanoic acid" OR - PubMed

Hi Joyce,

Sorry for the delay. I'm not sure how I missed February. I'm sending you the PubMed search results for the period February 1st to 15th. There were 52 results.

Jenn

Jennifer McCune
Public Access/Cataloging Librarian
Arctic Slope Mission Services (Contractor)
3334C WJC West
US EPA Headquarters, Washington, D.C.
Desk: 202-566-1432
McCune.Jennifer@epa.gov

Tell us how we're doing - rate our customer service!
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From: Sent by NCBI [mailto:nobody@ncbi.nlm.nih.gov]
Sent: Tuesday, March 06, 2018 6:45 PM
To: McCune, Jennifer <McCune.Jennifer@epa.gov>
Subject: perfluorooctanoate OR "perfluorooctanoic acid" OR - PubMed

This message contains search results from the National Center for Biotechnology Information (NCBI) at the U.S. National Library of Medicine (NLM). Do not reply directly to this message

Sent on: Tue Mar 6 18:41:54 2018

Search: perfluorooctanoate OR "perfluorooctanoic acid" OR "perfluoroctanoic acid" OR pfoa OR "perfluorinated chemicals" OR "perfluorinated compounds" OR "perfluorinated homologue groups" OR "perfluorinated contaminants" OR "perfluorinated surfactants" OR perfluoroalkyl acids OR "perfluorinated alkylated substances" OR "perfluoroalkylated substances" OR pfba OR "perfluorobutanoic acid" OR perfluorochemicals OR "telomer alcohol" OR "telomer alcohols" OR "fluorotelomer alcohols" OR "polyfluoroalkyl compounds" OR "perfluorooctane sulfonate" OR pfos OR "perfluorooctanesulfonic acid" OR "perfluorooctane sulfonic acid" OR "perfluorooctane sulphonate" OR perfluorooctane sulfonate OR "perfluorooctanyl sulfonate" OR "Heptadecafluorooctane-1-sulphonic" OR "Heptadecafluoro-1-octanesulfonic acid" OR perfluorononanoate OR pfhxa OR "perfluorohexanoic acid" OR "fluorinated surfactants" Filters: From 2018/02/01 to 2018/02/15, English

PubMed Results

Items 1 - 52 of 52 (Display the 52 citations in PubMed)

1. Chemosphere. 2018 Feb 10;200:124-132. doi: 10.1016/j.chemosphere.2018.02.065. [Epub ahead of print]

Anaerobic biodegradation of 8:2 fluorotelomer alcohol in anaerobic activated sludge: Metabolic products and pathways.

Li F[1], Su Q[1], Zhou Z[1], Liao X[1], Zou J[1], Yuan B[2], Sun W[3].

Author information:

1 Xiamen Engineering & Technology Research Center for Urban Water Environment Planning and Remediation, College of Civil Engineering, Huaqiao University, Xiamen, 361021, China.

2 Xiamen Engineering & Technology Research Center for Urban Water Environment Planning and Remediation, College of Civil Engineering, Huaqiao University, Xiamen, 361021, China. Electronic address: blyuan@hqu.edu.cn.

3 Department of Civil and Environmental Engineering, Southern Methodist University, Dallas, TX, 75275, USA. Electronic address: wsun@smu.edu.

Abstract

The anaerobic biodegradability and metabolic pathways of 8:2 fluorotelomer alcohol (8:2 FTOH) were investigated in anaerobic activated sludge. The biodegradation was well described by a double exponential decay model. 8:2 FTOH was biodegraded to poly- and perfluorinated metabolites with the release of fluoride ion. All polyfluorinated metabolites were intermediate metabolic products and could be further transformed to other metabolites, while perfluorinated metabolites were terminal products. 2H-perfluoro-2-decenoic acid (8:2 FTUA) and perfluorooctanoic acid (PFOA) were verified as the most abundant poly- and perfluorinated metabolites, respectively. Two shorter-chain perfluorinated metabolites, perfluoropentanoic acid (PFPeA) and perfluorobutyric acid (PFBA), were first reported in the biodegradation of 8:2 FTOH. However, the total molar recovery of 8:2 FTOH decreased with increasing incubation time, indicating that there might be some

unknown metabolites. Thus, the anaerobic biodegradation pathways were proposed as follows: 8:2 FTOH was oxidized to 8:2 FTUA and 2-perfluorooctyl ethanoic acid (8:2 FTCA) via 2-perfluorooctyl acetaldehyde (8:2 FTAL), and then 8:2 FTUA and 8:2 FTCA were further transformed to 1-perfluoroheptyl ethanol (7:2 sFTOH) via 3-perfluoroheptyl propionic acid (7:3 acid) or/and 3-perfluoroheptyl acrylic acid (7:3 Uacid), and eventually 7:2 sFTOH was further biodegraded to PFOA and other perfluorocarboxylates containing less than eight carbons.

PMID: 29476957

Similar articles

2. Mar Pollut Bull. 2018 Feb;127:285-288. doi: 10.1016/j.marpolbul.2017.12.020. Epub 2017 Dec 21.

Occurrence and distribution of perfluoroalkyl substances (PFASs) in sediments of the Dalian Bay, China.

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Abstract

In the present study, the spatial distributions and vertical variations of PFASs in the sediments of the Dalian Bay were investigated. The total concentrations of PFASs (∑PFASs) in surface sediments of Dalian Bay ranged from 1.49 to 2.66ngg^{-1} dw. The predominant PFASs in surface sediments were PFOA, PFBS and PFBA with the concentration ranges of 0.50 to 0.95, 0.21 to 0.94, and 0.035 to 0.32ngg^{-1} dw, respectively. For the two sediment cores, ∑PFASs ranged from 1.20 to 2.00 and from 1.37 to 2.06ngg^{-1} dw, respectively. There was a maximum ∑PFASs concentration value near the surface. In general, ∑PFASs gradually decreased with increasing sampling depth after reaching the maximum. PFOA, PFBS and PFBA were also the predominant PFASs in the two sediment cores. It is recommended that the monitoring and risk

assessment of short-chain PFAS should be taken into consideration, and further researches are needed to understand the transportation and fate of these chemicals in the aquatic environment.

PMID: 29475664

Similar articles

3. Mar Pollut Bull. 2018 Feb;127:207-210. doi: 10.1016/j.marpolbul.2017.11.058. Epub 2017 Dec 21.

First observations of perfluorooctane sulfonate occurrence and depuration from Sydney Rock Oysters, Saccostrea glomerata, in Port Stephens NSW Australia.

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Abstract

Following the discovery of potential chronic perfluoroalkyl substances (PFAS) contamination of Tilligerry Creek, Port Stephens (New South Wales Australia), sampling was undertaken to confirm the presence, extent and levels of contamination in commercial oyster crops of Sydney Rock Oyster (Saccostrea glomerata) and Pacific Oyster (Crassostrea gigas) grown within the estuary. Among a range of PFAS tested, only perfluorooctane sulfonate (PFOS) was detected. Concentrations of PFOS in oyster tissues for S. glomerata ranged from 1.6μgkg^{-1} ww (wet weight) to below the limit of reporting of 0.3μgkg^{-1} ww, with concentrations generally decreasing toward the lower reaches of the estuary. The sample of C. gigas tested had a PFOS concentration of 0.71μgkg^{-1} ww that was consistent with concentrations observed in nearby S. glomerata. For harvest size (50-60g) S. glomerata, both holding contaminated oysters in a depuration system, and relocation to a non-contaminated area, saw significant reductions in the tissue PFOS concentrations. For oysters held in a depuration system, PFOS depurated at a rate of 0.008h^{-1} (0.004-0.019h^{-1}; 90% CI), which corresponded with a depuration half-life of 87h (35-155h; 90%). A more conservative model (fitted to data that assumed

concentrations<LOR were equal 0.5·LOR) predicted a depuration half-life of 131h. PFOS concentrations had fallen to below detectable limits within 162h. Similar decreases were observed in relocated oysters.

PMID: 29475655

Similar articles

4. Chemosphere. 2018 Feb 12;199:453-458. doi: 10.1016/j.chemosphere.2018.02.074. [Epub ahead of print]

Selection criteria for oxidation method in total organic carbon measurement.

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Abstract

During the measurement of total organic carbon (TOC), dissolved organic carbon is converted into CO_2 by using high temperature combustion (HTC) or wet chemical oxidation (WCO). However, the criteria for selecting the oxidation methods are not clear. In this study, the chemical structures of organic material were considered as a key factor to select the oxidation method used. Most non-degradable organic compounds showed a similar oxidation efficiency in both methods, including natural organic compounds, dyes, and pharmaceuticals, and thus both methods are appropriate to measure TOC in waters containing these compounds. However, only a fraction of the carbon in the halogenated compounds (perfluorooctanoic acid and trifluoroacetic acid) were oxidized using WCO, resulting in measured TOC values that are considerably lower than those determined by HTC. This result is likely due to the electronegativity of halogen elements which inhibits the approach of electron-rich sulfate radicals in the WCO, and the higher bond strength of carbon-halogen pairs as compared to carbon-hydrogen bonds, which results in a lower degree of oxidation of the compounds. Our results indicate that WCO could be used to oxidize most organic compounds, but may not be appropriate to quantify TOC in organic carbon pools that contain certain halogenated compounds.

PMID: 29453072

Similar articles

5. Sci Total Environ. 2018 Feb 10;628-629:226-232. doi: 10.1016/j.scitotenv.2018.02.050. [Epub ahead of print]

The serum concentrations of perfluoroalkyl compounds were inversely associated with growth parameters in 2-year old children.

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Abstract

The relationship between the serum concentrations of perfluoroalkyl compounds (PFCs) and growth parameters was investigated in 2-year-old Korean children. The study included 361 children aged 2years (192 boys and 169 girls; 22-27months), born at term appropriate-for-gestational-age, who visited between 2012 and 2013. Growth parameters of height and weight, and serum samples were collected from 2-year-old children. Four PFCs (perfluorohexane sulfonic acid [PFHxS], perfluorooctane sulfonic acid [PFOS], perfluorooctanoic acid [PFOA], and perfluorononanoic acid [PFNA]), perfluorodecanoic acid (PFDA), perfluoroundecanoic acid (PFUnDA), and perfluoroheptanoic acid (PFHpA) were detected in >99, 93.4,

89.8, and 74.2% of the serum samples, respectively. The duration of breastfeeding was positively associated with the serum concentrations of ln-transformed PFHxS, PFOS, PFHpA, PFOA, PFNA, PFDA, and PFUnDA (all P<0.001). Height at 2years of age was inversely related to PFHxS, PFOS, PFOA, PFNA, and PFDA concentrations (adjusted β per ln unit [95% confidence interval, CI]: -0.84 [-1.26, -0.42], -0.77 [-1.27, -0.15], -0.91 [-1.36, -0.47], -0.48 [-1.40, -0.51], and -0.44 [-0.77, -0.10] cm, respectively), after adjusting for age, sex, and midparental height. Weight at 2years of age was inversely associated with PFNA (adjusted β per ln unit [95% CI]: -0.32 [-0.48, -0.15] kg), after adjusting for age, sex, and parental BMI. In conclusion, the serum concentrations of PFCs were inversely associated with growth parameters in 2-year-old children.

PMID: 29438932

Similar articles

6. PLoS Med. 2018 Feb 13;15(2):e1002502. doi: 10.1371/journal.pmed.1002502. eCollection 2018 Feb.

Perfluoroalkyl substances and changes in body weight and resting metabolic rate in response to weight-loss diets: A prospective study.

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Abstract

BACKGROUND:

The potential endocrine-disrupting effects of perfluoroalkyl substances (PFASs) have been demonstrated in animal studies, but whether PFASs may interfere with body weight regulation in humans is largely unknown. This study aimed to examine the associations of PFAS exposure with changes in body weight and resting metabolic rate (RMR) in a diet-induced weight-loss setting.

METHODS AND FINDINGS:

In the 2-year POUNDS Lost randomized clinical trial based in Boston, Massachusetts, and Baton Rouge, Louisiana, that examined the effects of energy-restricted diets on weight changes, baseline plasma concentrations of major PFASs were measured among 621 overweight and obese participants aged 30-70 years. Body weight was measured at baseline and 6, 12, 18, and 24 months. RMR and other metabolic parameters, including glucose, lipids, thyroid hormones, and leptin, were measured at baseline and 6 and 24 months. Participants lost an average of 6.4 kg of body weight during the first 6 months (weight-loss period) and subsequently regained an average of 2.7 kg of body weight during the period of 6-24 months (weight regain period). After multivariate adjustment, baseline PFAS concentrations were not significantly associated with concurrent body weight or weight loss during the first 6 months. In contrast, higher baseline levels of PFASs were significantly associated with a greater weight regain, primarily in women. In women, comparing the highest to the lowest tertiles of PFAS concentrations, the multivariate-adjusted mean weight regain (SE) was 4.0 (0.8) versus 2.1 (0.9) kg for perfluorooctanesulfonic acid (PFOS) (Ptrend = 0.01); 4.3 (0.9) versus 2.2 (0.8) kg for perfluorooctanoic acid (PFOA) (Ptrend = 0.007); 4.7 (0.9) versus 2.5 (0.9) kg for perfluorononanoic acid (PFNA) (Ptrend = 0.006); 4.9 (0.9) versus 2.7 (0.8) kg for perfluorohexanesulfonic acid (PFHxS) (Ptrend = 0.009); and 4.2 (0.8) versus 2.5 (0.9) kg for perfluorodecanoic acid (PFDA) (Ptrend = 0.03). When further adjusted for changes in body weight or thyroid hormones during the first 6 months, results remained similar. Moreover, higher baseline plasma PFAS concentrations, especially for PFOS and PFNA, were significantly associated with greater decline in RMR during the weight-loss period and less increase in RMR during the weight regain period in both men and women. Limitations of the study include the possibility of unmeasured or residual confounding by socioeconomic and psychosocial factors, as well as possible relapse to the usual diet prior to randomization, which could have been rich in foods contaminated by PFASs through food packaging and also dense in energy.

CONCLUSIONS:

In this diet-induced weight-loss trial, higher baseline plasma PFAS concentrations were associated with a greater weight regain, especially in women, possibly explained by a slower regression of RMR levels. These data illustrate a potential novel pathway through which PFASs interfere with human body weight regulation and metabolism. The possible impact of environmental chemicals on the obesity epidemic therefore deserves attention.

TRIAL REGISTRATION:

ClinicalTrials.gov NCT00072995.

PMCID: PMC5810983 Free PMC Article
PMID: 29438414
Similar articles

7. Sci Total Environ. 2018 Feb 8;628-629:110-120. doi: 10.1016/j.scitotenv.2018.01.167. [Epub ahead of print]

A critical analysis of published data to discern the role of soil and sediment properties in determining sorption of per and polyfluoroalkyl substances (PFASs).

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Abstract

Widespread usage of per- and polyfluoroalkyl substances (PFASs) has caused major environmental contamination globally. The hydrophilic and hydrophobic properties of PFASs affect the sorption behaviour and suggest organic carbon may not be the only factor affecting sorption. We reviewed the quality of all data published in peer-reviewed literature on sorption of PFASs to critically evaluate the role organic carbon (OC) and other properties have in sorption of PFASs in soils or sediments. The largest data sets available were for perfluorooctanoic acid (PFOA, n = 147) and perfluorooctane sulfonic acid (PFOS, n = 178), and these analyses showed very weak correlations between sorption coefficient (K_d) and OC alone ($R^2 = 0.05$-0.07). When only laboratory-derived K_d values of PFASs and OC were analysed, the R^2 values increased for PFOA ($R^2 = 0.24$, n = 42), PFOS ($R^2 = 0.38$, n = 69), perfluorononanoic acid (PFNA, $R^2 = 0.77$ n = 12), and perfluorodecanoic acid (PFDA, $R^2 = 0.78$, n = 13). However, the relationships were heavily skewed by one or two high OC values. Similarly there was no significant relationship between K_d values and pH for PFOS ($R^2 = 0.06$) and PFOA ($R^2 = 0.07$), across a range of environmental pH values. Our analyses showed sorption behaviour of a range of PFASs could not be explained by a single soil or sediment property. Multiple regression models better explained the sorption behaviour of a number of PFASs. Regressions of OC and pH together explained a significant proportion of the variation in K_d values for 9 out of 14 PFASs and 8 of these regressions had $\geq$10 data points. This review highlighted that at least OC, pH and clay content are properties having significant effect on sorption. There is a clear need for more data and studies with thorough characterisation of soils or sediments to better understand their role in PFASs sorption. Current assessments based on OC alone are likely to be erroneous.

PMID: 29428853
Similar articles

8. Water Res. 2018 May 1;134:226-233. doi: 10.1016/j.watres.2018.01.066. Epub 2018 Feb 3.

Fate of perfluoroalkyl substances within a small stream food web affected by sewage effluent.

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Abstract

The fate of fourteen target perfluoroalkyl substances (PFASs) are described within a small stream affected by a sewage treatment plant (STP) effluent. Concentrations of target PFASs in samples of water, benthic macroinvertebrates and brown trout (Salmo trutta) are presented. Two hundred brown trout individuals originating from clean sites within the same stream were tagged and stocked into an experimental site affected by the STP's effluent. As a passive sampling approach, polar organic chemical integrative samplers (POCIS) were deployed in the water to reveal the water-macroinvertebrates-fish biotransformation processes of PFASs. Bioconcentration/bioaccumulation of target compounds was monitored one, three, and six months after stocking. Twelve of the fourteen target PFASs were found in concentration above the LOQ in at least one of the studied matrices. The compound pattern varied significantly between both the studied species and water samples. Concerning the accumulation of PFASs in fish, the highest concentrations were found in the liver of individuals sampled after three months of exposure. These concentrations rapidly decreased after six months although the water concentrations were slightly increasing during experiment.

PMID: 29427964
Similar articles

9. Environ Pollut. 2018 Feb 7;236:505-513. doi: 10.1016/j.envpol.2018.01.066. [Epub ahead of print]

Evaluation of a national data set for insights into sources, composition, and concentrations of per- and polyfluoroalkyl substances (PFASs) in U.S. drinking water.

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Abstract

The United States Environmental Protection Agency (USEPA) completed nationwide screening of six perfluoroalkyl substances in U.S. drinking water from 2013 to 2015 under the Third Unregulated Contaminant Monitoring Rule (UCMR3). UCMR3 efforts yielded a dataset of 36,139 samples containing analytical results from >5000 public water systems (PWSs). This study used UCMR3 data to investigate three aspects of per- and polyfluoroalkyl substances (PFASs) in drinking water: the occurrence of PFAS and co-contaminant mixtures, trends in PFAS detections relative to PWS characteristics and potential release types, and temporal trends in PFAS occurrence. This was achieved through bivariate and multivariate analyses including categorical analysis, concentration ratios, and hierarchical cluster analysis. Approximately 50% of samples with PFAS detections contained ≥2 PFASs, and 72% of detections occurred in groundwater. Large PWSs (>10,000 customers) were 5.6 times more likely than small PWSs (≤10,000 customers) to exhibit PFAS detections; however, when detected, median total PFAS concentrations were higher in small PWSs (0.12 μg/L) than in large (0.053 μg/L). Bivariate and multivariate analyses of PFAS composition suggested PWSs reflect impacts due to firefighting foam use and WWTP effluent as compared to other source types for which data were available. Mann-Kendall analysis of quarterly total PFAS detection rates indicated an increasing trend over time ($p = 0.03$). UCMR3 data provide a foundation for tiered design of targeted sampling and analysis plans to address remaining knowledge gaps in the sources, composition, and concentrations of PFASs in U.S. drinking water.

PMID: 29427949

Similar articles

10. Chemosphere. 2018 May;198:442-449. doi: 10.1016/j.chemosphere.2018.01.152. Epub 2018 Feb 3.

Interactions of perfluorooctanoic acid and perfluorooctanesulfonic acid with serum albumins

by native mass spectrometry, fluorescence and molecular docking.

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Abstract

The binding information of perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS) with bovine and human serum albumins was investigated and characterized in details by using a combination method of electrospray ionization mass spectrometry (ESI-MS), fluorescence, circular dichroism (CD) and molecular docking (MD). The ESI-MS analysis revealed that maximally eight PFOA or PFOS molecules could bind to serum albumins at high mole ratios of PFOA/PFOS. Association constants were measured by ESI-MS and suggested that PFOS had a better binding affinity than PFOA. PFOA and PFOS were likely to bind with serum albumins in more than one pocket. The CD data demonstrated that binding of PFOA and PFOS could change the conformation of serum albumins with decreasing α-helix content, which may affect the protein physiological function. The phenomenon of protein fluorescence quenching by the binding of PFOA and PFOS indicated that the hydrophobic pocket proximate to Trp 214 in human serum albumin might be one of the dominated binding sites. This assumption was further confirmed by MD simulation. Consistent to ESI-MS observation, MD results also displayed a stronger binding affinity of PFOS than PFOA according to the calculated binding free energy, which is probably ascribed to one more hydrogen bond formed in the PFOS-bound protein complexes.

PMID: 29425944

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11. Integr Environ Assess Manag. 2018 Feb 9. doi: 10.1002/ieam.4035. [Epub ahead of print]

A Critical Review of the Application of Polymer of Low Concern and Regulatory Criteria to Fluoropolymers.

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Abstract

Per- and poly-fluoroalkyl substances (PFAS) are a group of fluorinated substances that are in the focus of researchers and regulators due to widespread presence in the environment and biota, including humans, of perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA). Fluoropolymers, high molecular weight polymers within the PFAS group, have unique properties that constitute a distinct class within the PFAS group. Fluoropolymers have thermal, chemical, photochemical, hydrolytic, oxidative and biological stability. They have negligible residual monomer and oligomer content and low to no leachables. Fluoropolymers are practically insoluble in water and not subject to long-range transport. With a molecular weight well over 100,000 Da, fluoropolymers cannot cross the cell membrane. Fluoropolymers are not bioavailable or bioaccumulative, as evidenced by toxicology studies on PTFE: acute and subchronic systemic toxicity, irritation, sensitization, local toxicity on implantation, cytotoxicity, in vitro and in vivo genotoxicity, hemolysis, complement activation, and thrombogenicity. Clinical studies of patients receiving permanently implanted PTFE cardiovascular medical devices demonstrate no chronic toxicity or carcinogenicity, reproductive or developmental or endocrine toxicity. This paper brings together fluoropolymer toxicity data, human clinical data, and physical-chemical-thermal-biological data for review and assessment to show that fluoropolymers satisfy widely accepted assessment criteria to be considered as "Polymers of Low Concern". This review concludes that fluoropolymers are distinctly different from other polymeric and non-polymeric per- and poly-fluoroalkyl substances and should be separated from them for hazard assessment or regulatory purposes. Grouping fluoropolymers with all classes of PFAS for "read across" or structure activity relationship assessment is not scientifically appropriate.
PMID: 29424474
Similar articles

12. Chemosphere. 2018 May;198:311-319. doi: 10.1016/j.chemosphere.2018.01.132. Epub 2018 Feb 3.

Enhanced generation of perfluoroalkyl carboxylic acids (PFCAs) from fluorotelomer alcohols (FTOHs) via ammonia-oxidation process.

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Abstract

With the phase-out of persistent, bioaccumalative, and toxic perfluoroalkyl carboxylic acids (PFCAs), it is needed to explore the potential release of PFCAs from precursors being emitted into the environment. Biotransformation of fluorotelomer alcohols (FTOHs) via biological processes in wastewater treatment plants (WWTPs) leads to discharge of PFCAs into receiving waters. However, the commonly existed microbial activity that can impact on FTOHs biodegradation in WWTPs remains unclear. The objective of present research was to explore the relationship between ammonia-oxidation process and the enhanced PFCAs generation from FTOHs biodegradation under aerobic activated sludge. The obtained results indicate that the cometabolism process performed by nitrifying microorganisms (NMs) was responsible for enhanced PFCAs generation. Among NMs, the ammonia-oxidation bacteria that can express non-specific enzyme of ammonia monooxygenases resulted in the enhanced PFCAs generation from FTOHs. Meanwhile, the different addition amount of ammonia contributed to different defluorination efficiency of FTOHs. The present study further correlated the enhanced PFCAs generation from FTOHs biodegradation with ammonia-oxidation process, which can provide practical information on effective management of PFCAs generation in WWTPs.

PMID: 29421745

Similar articles

13. Bull Environ Contam Toxicol. 2018 Feb 7. doi: 10.1007/s00128-018-2282-z. [Epub ahead of print]

Bioaccumulation Patterns of Perfluoroalkyl Acids in an Estuary of the Ariake Sea, Japan.

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4 National Institute for Environmental Studies, 16-2 Onogawa, Tsukuba, Ibaraki, 305-8506, Japan.

Abstract

To evaluate the bioaccumulation potential of perfluoroalkyl acids (PFAAs) in an aquatic food web, we measured the concentrations of nine PFAAs in the water and aquatic organisms from an estuary of the Omuta River, Japan. Average log bioaccumulation factors for all PFAAs ranged from 2.0 to 2.8. There was no positive correlation observed between PFAA carbon chain length and there was no evidence of trophic magnification demonstrated among the sample types collected. These results differed from the findings of previous studies in enclosed bodies of water, perhaps because river mouth-estuarine ecotones are more variable spatially and temporally and include some fish that are highly migratory. Further investigations of bioaccumulation factors will be needed to elucidate the tendency of amphiphilic chemicals to bioaccumulate in these river mouth-estuarine ecotones.

PMID: 29417160

Similar articles

14. Environ Pollut. 2018 Feb 3;236:373-381. doi: 10.1016/j.envpol.2018.01.065. [Epub ahead of print]

Current and historical concentrations of poly and perfluorinated compounds in sediments of the northern Great Lakes - Superior, Huron, and Michigan.

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Abstract

Current and historical concentrations of 22 poly- and perfluorinated compounds (PFASs) in sediment collected from Lake Superior and northern Lake Michigan in 2011 and Lake Huron in 2012 are reported. The sampling was performed in two ways, Ponar grabs of surface sediments for current spatial distribution across the lake and dated cores for multi-decadal temporal trends. Mean concentrations of the sum of PFASs (∑PFASs) were 1.5, 4.6 and 3.1 ng g^{-1} dry mas (dm) in surface sediments for Lakes Superior, Michigan and Huron, respectively. Of the five Laurentian Lakes, the watersheds of Superior and Huron are the less densely populated by humans, and concentrations observed were typically less and from more diffuse sources, due to lesser urbanization and industrialization. However, some regions of greater concentrations were observed and might indicate more local, point sources. In core samples concentrations ranged from <LOQ to 46.6 ng g^{-1} dm among the three lakes with concentrations typically increasing with time. Distributions of PFASs within dated cores largely corresponded with increase in use of PFASs, but with physiochemical characteristics also affecting distribution. Perfluoroalkyl sulfonates (PFSAs) with chain lengths >7 that include perfluoro-n-octane sulfonate (PFOS) bind more strongly to sediment, which resulted in more accurate analyses of temporal trends. Shorter-chain PFASs, such as perfluoro-n-butanoic acid which is the primary replacement for C8 PFASs that have been phased out, are more soluble and were identified in some core layers at depths corresponding to pre-production periods. Thus, analyses of temporal trends of these more soluble compounds in cores of sediments were less accurate. Total elemental fluorine (TF) and extractable organic fluorine (EOF) indicated that identified PFASs were not a significant fraction of fluorine containing compounds in sediment (<0.01% in EOF).

PMID: 29414360

Similar articles

15. Environ Toxicol Chem. 2018 Feb 5. doi: 10.1002/etc.4060. [Epub ahead of print]

Immunotoxicity in green mussels under perfluoroalkyl substance (PFAS) exposure:

Reversible response and response model development.

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Abstract

The immunotoxicity of 4 commonly detected perfluoroalkyl substances (PFASs), namely, perfluorooctanesulfonate (PFOS), perfluorooctanoic acid (PFOA), perfluorononanoic acid (PFNA), and perfluorodecanoic acid (PFDA) was investigated by measuring biomarkers of the immune profile of green mussels, Perna viridis. The biomarkers included neutral red retention, phagocytosis, and spontaneous cytotoxicity, all of which were tested on mussel hemocytes. Hemocytes are an important component of the invertebrate immune system. We found that exposure to PFASs could lead to reduced hemocyte cell viability and suppress immune function by up to 50% of normal performance within the experimental exposure range. The results indicate that PFASs have an immunotoxic potential and thus could pose severe health risks to aquatic organisms. The reported immunotoxicity is likely to result from the compounds' direct and indirect interactions with the hemocyte membrane, and therefore likely to affect the functionality of these cells. The immunotoxic response was found to be related to the organism's burden of PFASs, and was reversible when the compounds were removed from the test organisms. Based on this relationship, models using an organism's PFAS concentration and bioaccumulation factor (BAF) as the independent variables were established to quantify PFAS-induced immunotoxicity. The models help us to gain a better understanding of the toxic mechanism of PFASs, and provide a tool to evaluate adverse effects for the whole group of compounds with one mathematical equation. Environ Toxicol Chem 2018;9999:1-8.

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PMID: 29405365

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16. Environ Sci Pollut Res Int. 2018 Feb 5. doi: 10.1007/s11356-018-1406-7. [Epub ahead of print]

The effect of dietary selenium addition on the concentrations of heavy metals in the tissues of fallow deer (Dama dama L.) in Croatia.

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Abstract

The aim of this research was to determine the concentrations of cadmium, lead, mercury, and arsenic and the essential elements iron and selenium in the tissues (muscle, kidney, liver, spleen, and fat) of fallow deer (Dama dama L.) without and with supplemental selenium addition. Another aim was to determine the effect of selenium addition on the indicators of oxidative stress, namely, the levels of superoxide dismutase, glutathione peroxidase, glutathione, and vitamin E. The research was carried out with 40 fallow deer during two research periods. Supplemental feed without selenium addition was provided during the first research period, and supplemental feed with added selenium (3 mg/kg) was provided for 60 days during the second research period. The concentration of selenium in tissues was higher in the second research period than in the first research period (in kidney tissue, 0.957 vs. 0.688 mg/kg, $P < 0.05$). The dietary addition of selenium decreased ($P < 0.05$) the concentrations of some heavy metals (lead in the spleen = 0.06 vs. 0.27 mg/kg and in the fatty tissue = 0.17 vs. 0.69 mg/kg; arsenic in the muscle tissue = 0.005 vs. 0.014 mg/kg, liver = 0.003 vs. 0.009 mg/kg, spleen = 0.004 vs. 0.013 mg/kg, and fat = 0.008 vs. 0.016 mg/kg). The activity of glutathione peroxidase was significantly higher ($P < 0.05$) in the second research period than in the first research period (1375.36 vs. 933.23 U/L).

PMID: 29404953

Similar articles

17. Environ Sci Technol. 2018 Feb 15. doi: 10.1021/acs.est.7b05912. [Epub ahead of print]

UV/Nitrilotriacetic Acid Process as a Novel Strategy for Efficient Photoreductive Degradation of Perfluorooctanesulfonate.

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Abstract

Perfluorooctanesulfonate (PFOS) is a toxic, bioaccumulative, and highly persistent anthropogenic chemical. Hydrated electrons (e_{aq}^-) are potent nucleophiles that can effectively decompose PFOS. In previous studies, e_{aq}^- are mainly produced by photoionization of aqueous anions or aromatic compounds. In this study, we proposed a new photolytic strategy to generate e_{aq}^- and in turn decompose PFOS, which utilizes nitrilotriacetic acid (NTA) as a photosensitizer to induce water photodissociation and photoionization, and subsequently as a scavenger of hydroxyl radical ($^{\bullet}OH$) to minimize the geminate recombination between $^{\bullet}OH$ and e_{aq}^-. The net effect is to increase the amount of e_{aq}^- available for PFOS degradation. The UV/NTA process achieved a high PFOS degradation ratio of 85.4% and a defluorination ratio of 46.8% within 10 h. A pseudo-first-order rate constant (k) of 0.27 h^{-1} was obtained. The laser flash photolysis study indicates that e_{aq}^- is the dominant reactive species responsible for PFOS decomposition. The generation of e_{aq}^- is greatly enhanced and its half-life is significantly prolonged in the presence of NTA. The electron spin resonance (ESR) measurement verified the photodissociation of water by detecting $^{\bullet}OH$. The model compound study indicates that the acetate and amine groups are the primary reactive sites.

PMID: 29397704

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18. Environ Health. 2018 Feb 1;17(1):11. doi: 10.1186/s12940-018-0355-4.

Can profiles of poly- and Perfluoroalkyl substances (PFASs) in human serum provide information on major exposure sources?

Hu XC[1,2], Dassuncao C[3,4], Zhang X[4], Grandjean P[3,5], Weihe P[6], Webster GM[7], Nielsen F[5], Sunderland EM[3,4].

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Abstract

BACKGROUND:

Humans are exposed to poly- and perfluoroalkyl substances (PFASs) from diverse sources and this has been associated with negative health impacts. Advances in analytical methods have enabled routine detection of more than 15 PFASs in human sera, allowing better profiling of PFAS exposures. The composition of PFASs in human sera reflects the complexity of exposure sources but source identification can be confounded by differences in toxicokinetics affecting uptake, distribution, and elimination. Common PFASs, such as perfluorooctanoic acid (PFOA), perfluorooctane sulfonic acid (PFOS) and their precursors are ubiquitous in multiple exposure sources. However, their composition varies among sources, which may impact associated adverse health effects.

METHODS:

We use available PFAS concentrations from several demographic groups in a North Atlantic seafood consuming population (Faroe Islands) to explore whether chemical fingerprints in human sera provide insights into predominant exposure sources. We compare serum PFAS profiles from Faroese individuals to other North American populations to investigate commonalities in potential exposure sources. We compare individuals with similar demographic and physiological characteristics and samples from the same years to reduce confounding by toxicokinetic differences and changing environmental releases.

RESULTS:

Using principal components analysis (PCA) confirmed by hierarchical clustering, we assess variability in serum PFAS concentrations across three Faroese groups. The first principal component (PC)/cluster consists of C9-C12 perfluoroalkyl carboxylates (PFCAs) and is consistent with measured PFAS profiles in consumed seafood. The second PC/cluster includes perfluorohexanesulfonic acid (PFHxS) and the PFOS precursor N-ethyl perfluorooctane sulfonamidoacetate (N-EtFOSAA), which are directly used or metabolized from fluorochemicals in consumer products such as carpet and food packaging. We find that the same compounds are associated with the same exposure sources in two North American populations, suggesting generalizability of results from the Faroese population.

CONCLUSIONS:

We conclude that PFAS homologue profiles in serum provide valuable information on major exposure sources. It is essential to compare samples collected at similar time periods and to correct for demographic groups that are highly affected by differences in physiological processes (e.g., pregnancy). Information on

PFAS homologue profiles is crucial for attributing adverse health effects to the proper mixtures or individual PFASs.

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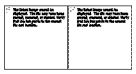

19. Environ Sci Technol. 2018 Feb 12. doi: 10.1021/acs.est.7b06327. [Epub ahead of print]

Chlorinated Polyfluorinated Ether Sulfonates Exhibit Higher Activity toward Peroxisome Proliferator-Activated Receptors Signaling Pathways than Perfluorooctanesulfonate.

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Abstract

Chlorinated polyfluorinated ether sulfonates (Cl-PFAESs) are the alternative products of perfluorooctanesulfonate (PFOS) in the metal plating industry in China. The similarity in chemical structures between Cl-PFAESs and PFOS makes it reasonable to assume they possess similar biological activities. In the present study, we investigated whether Cl-PFAESs could induce cellular effects through peroxisome proliferator-activated receptors (PPARs) signaling pathways like PFOS. By using fluorescence competitive binding assay, we found two dominant Cl-PFAESs (6:2 Cl-PFAES and 8:2 Cl-PFAES) bound to PPARs with affinity higher than PFOS. Based on the luciferase reporter gene transcription assay, the two Cl-PFAESs also showed agonistic activity toward PPARs signaling pathways with potency similar to (6:2 Cl-PFAES) or higher than (8:2 Cl-PFAES) PFOS. Molecular docking simulation showed the two Cl-PFAESs fitted into the ligand binding pockets of PPARs with very similar binding mode as PFOS. The cell function results showed Cl-PFAESs promoted the process of adipogenesis in 3T3-L1 cells with potency higher than PFOS. Taken together, we found for the first time that Cl-PFAESs have the ability to interfere with PPARs signaling pathways, and current exposure level of 6:2 Cl-PFAES in occupational workers has exceeded the margin of safety. Our study highlights the potential health risks of Cl-PFAESs as PFOS alternatives.
PMID: 29389105

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20. Environ Sci Technol. 2018 Feb 20;52(4):2016-2024. doi: 10.1021/acs.est.7b06241. Epub 2018 Feb 8.

Perfluoroalkyl Acids Including Isomers in Tree Barks from a Chinese Fluorochemical Manufacturing Park: Implication for Airborne Transportation.

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Abstract

Measurement of airborne perfluoroalkyl acids (PFAAs) is challenging, but important for understanding their atmospheric transport. Tree bark is good media for monitoring semivolatile compounds in the atmosphere. Whether it could work as an indicator of airborne PFAAs was first examined in this study. Bark and leaf samples collected around a Chinese fluorochemical manufacturing park (FMP) were analyzed for PFAAs and their branched isomers. Total PFAA concentrations (∑PFAAs) in the bark (mean, 279 ng/g dw) and leaf (250 ng/g dw) samples were comparable. ∑PFAAs in the barks collected within the boundaries of the FMP were significantly ($p < 0.05$) higher than those outside the FMP, and displayed a decreasing spatial trend as the distance from the FMP increased. However, such spatial difference and trend were not observed for the leaves. PFAA compositional profiles in most of the tree barks were consistent with each other, but different from those in tree leaves. These results indicated that tree barks mainly accumulated airborne PFAAs, while uptake from soil and translocation could make partial contribution to those in leaves. Perfluorooctanoate and perfluorooctanesulfonate in barks had strictly consistent isomeric compositions with their electrochemical fluorination products. Overall, these results indicated that the bark could be a good indicator of airborne PFAAs with respect to their occurrence, isomeric signature, and atmospheric transport.

PMID: 29376335

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21. Anal Chem. 2018 Feb 20;90(4):2725-2731. doi: 10.1021/acs.analchem.7b04711. Epub 2018 Feb 2.

Mechanistic Understanding Leads to Increased Ionization Efficiency and Selectivity in Dielectric Barrier Discharge Ionization Mass Spectrometry: A Case Study with Perfluorinated Compounds.

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Abstract

Perfluorinated compounds have unique properties and many practical applications, but are difficult to ionize efficiently with soft ionization methods. An active capillary plasma ionization source based on dielectric barrier discharge ionization (DBDI) coupled with mass spectrometry was used to study the ionization pathway of perfluorinated compounds (PFCs), with the aim of both increasing the ionization efficiency and influencing the selectivity for generating product ions in negative ion mode. Cyclic and linear perfluorinated alkanes were found to mainly form $[M - F]^-$ and $[M - F + O]^-$ ions, respectively; the $[M]^{-\bullet}$ ion was only obtained at low discharge voltage. Additionally, fluorine attachment $[M + F]^-$ was observed mostly for perfluorinated alkenes. An isotope labeling experiment with $^{18}O_2$ showed that the primary source of oxygen in the substitution reaction is molecular oxygen, reacting with the analyte in the form of $O^{-\bullet}$ ions. The abundance of $[M - F + O]^-$ ions can thus be enhanced by increasing the plasma voltage to produce a higher $O^{-\bullet}$ ion density. The loss of the fluorine (without substitution by oxygen) was mainly observed at high frequency, a fact which can be exploited for tuning the ionization toward specific product ions. Overall, the mechanistic understanding of the ionization of PFCs allowed to increase the selectivity of the product ions, resulting in increased ionization efficiency.

PMID: 29356499

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22. Cytotechnology. 2018 Feb;70(1):479-487. doi: 10.1007/s10616-017-0164-6. Epub 2018 Jan 16.

Perfluorooctanoic acid impaired glucose homeostasis through affecting adipose AKT pathway.

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Abstract

Perfluorooctanoic acid (PFOA) is commonly applied in manufactured products, and its potential health risk is concerned greatly. Increasing evidences have indicated PFOA-induced liver dysfunction. However, detailed molecular mechanism has not been completely identified. In this study, we aimed to investigate the mechanical association between PFOA exposure and AKT pathway in white adipose tissue. As results, PFOA-treated mice showed increased blood glucose and insulin levels, and induced insulin resistance. In addition, serum levels of leptin and adiponectin in PFOA-treated mice were elevated. As shown in histological examination, increased cell death counts in PFOA-treated adipose were observed, as well as ultrastructural impairment in adipose cells was found. Further, immunohistochemical stains exhibited GLUT4, p-AKT positive cells were down-regulated in PFOA-treated adipose, while PTEN immune-labeled cells were reduced. In validated data, RT-PCR assay suggested adipose AKT mRNA was down-regulated in PFOA-treated mice, and PTEN mRNA was increased. Western blot data showed that intracellular PTEN protein level in PFOA-treated adipose was up-regulated, while phosphorylation of AKT, GSK3β levels were lowered dose-dependently. Taken together, the present findings indicate that PFOA impaired glucose homeostasis via negatively regulating AKT pathway in white adipose tissue.

PMCID: PMC5809677 [Available on 2019-02-01]
PMID: 29335808
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23. Food Chem Toxicol. 2018 Feb;112:375-382. doi: 10.1016/j.fct.2018.01.012. Epub 2018 Jan 11.

Internal exposure-based pharmacokinetic evaluation of potential for biopersistence of 6:2 fluorotelomer alcohol (FTOH) and its metabolites.

Kabadi SV[1], Fisher J[2], Aungst J[3], Rice P[3].

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Abstract

Polyfluorinated compounds (PFCs) are authorized for use as greaseproofing agents in food contact paper. As C8-PFCs (8-carbons) are known to accumulate in tissues, shorter-chain C6-PFCs (6-carbons) have replaced C8-PFCs in many food contact applications. However, the potential of C6-PFCs for human biopersistence has not been fully evaluated. For the first time, we provide internal exposure estimates to key metabolites of 6:2 fluorotelomer alcohol (6:2 FTOH), a monomeric component of C6-PFCs, to extend our understanding of exposure beyond estimates of external exposure. Pharmacokinetic data from published rat and human studies on 6:2 FTOH were used to estimate clearance and area under the curve (AUC) for its metabolites: 5:3 fluorotelomer carboxylic acid (5:3 A), perfluorohexanoic acid (PFHxA) and perfluoroheptanoic acid (PFHpA). Internal exposure to 5:3 A was the highest of evaluated metabolites across species and it had the slowest clearance. Additionally, 5:3 A clearance decreased with increasing 6:2 FTOH exposure. Our analysis provides insight into association of increased internal 5:3 A exposure with high biopersistence potential of 6:2 FTOH. Our results identify 5:3 A as an important biomarker of internal 6:2 FTOH exposure for use in biomonitoring studies, and are potentially useful for toxicological assessment of chronic dietary 6:2 FTOH exposure.

PMID: 29331735

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24. Anal Bioanal Chem. 2018 Feb;410(6):1657-1665. doi: 10.1007/s00216-017-0845-1. Epub 2018 Jan 12.

Magnetic covalent triazine-based frameworks as magnetic solid-phase extraction adsorbents for

sensitive determination of perfluorinated compounds in environmental water samples.

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Abstract

Covalent organic frameworks (COFs), which are a new type of carbonaceous polymeric material, have attracted great interest because of their large surface area and high chemical and thermal stability. However, to the best of our knowledge, no work has reported the use of magnetic COFs as adsorbents for magnetic solid-phase extraction (MSPE) to enrich and determine environmental pollutants. This work aims to investigate the feasibility of using covalent triazine-based framework (CTF)/Fe_2O_3 composites as MSPE adsorbents to enrich and analyze perfluorinated compounds (PFCs) at trace levels in water samples. Under the optimal conditions, the method developed exhibited low limits of detection (0.62-1.39 ng·L^{-1}), a wide linear range (5-4000 ng L^{-1}), good repeatability (1.12-9.71%), and good reproducibility (2.45-7.74%). The new method was successfully used to determine PFCs in actual environmental water samples. MSPE based on CTF/Fe_2O_3 composites exhibits potential for analysis of PFCs at trace levels in environmental water samples. Graphical abstract Magnetic covalent triazine-based frameworks (CTFs) were used as magnetic solid-phase extraction adsorbents for the sensitive determination of perfluorinated compounds in environmental water samples. PFBA perfluorobutyric acid, PFBS perfluorobutane sulfonate, PFDA perfluorodecanoic acid, PFDoA perfluorododecanoic acid, PFHpA perfluoroheptanoic acid, PFHxA perfluorohexanoic acid, PFHxS perfluorohexane sulfonate, PFNA perfluorononanoic acid, PFOA perfluorooctanoic acid, PFPeA perfluoropentanoic acid, PFUdA Perfluoroundecanoic acid.

PMID: 29330603

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25. Environ Int. 2018 Feb;111:260-267. doi: 10.1016/j.envint.2017.12.019. Epub 2018 Jan 8.

Incorporation of fetal and child PFOA dosimetry in the derivation of health-based toxicity values.

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Abstract

BACKGROUND:

Multiple agencies have developed health-based toxicity values for exposure to perfluorooctanoic acid (PFOA). Although PFOA exposure occurs in utero and through breastfeeding, current health-based toxicity values have not been derived using fetal or child dosimetry. Therefore, current values may underestimate the potential risks to fetuses and nursing infants.

OBJECTIVE:

Using fetal and child dosimetry, we aimed to calculate PFOA maternal human equivalent doses (HEDs), corresponding to a developmental mouse study lowest observed adverse effect level (LOAEL, 1mg/kg/day). Further, we investigated the impact of breastfeeding duration and PFOA half-life on the estimated HEDs.

METHODS:

First, a pharmacokinetic model of pregnancy and lactation in mice was used to estimate plasma PFOA levels in pups following a maternal exposure to 1mg PFOA/kg/day for gestational days 1-17. Four plasma PFOA concentration metrics were estimated in pups: i) average prenatal; ii) average postnatal; iii) average overall (prenatal and postnatal); and iv) maximum. Then, Monte Carlo simulations were performed using a pharmacokinetic model of pregnancy and lactation in humans to generate distributions of maternal HEDs that would result in fetal/child plasma levels equivalent to those estimated in pups using the mouse model. Median (HED_{50}) and 1st percentile (HED_{01}) of calculated HEDs were calculated.

RESULTS:

Estimated PFOA maternal HED_{50}s ranged from 3.0×10^{-4} to 1.1×10^{-3}mg/kg/day and HED_{01}s ranged from 4.7×10^{-5} to 2.1×10^{-4}mg/kg/day. All calculated HEDs were lower than the HED based on adult dosimetry derived by the Environmental Protection Agency (EPA) (5.3×10^{-3}mg/kg/day).

CONCLUSION:

Our results suggest that fetal/child dosimetry should be considered when deriving health-based toxicity values for potential developmental toxicants.

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PMID: 29325971
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26. Environ Sci Technol. 2018 Feb 6;52(3):982-990. doi: 10.1021/acs.est.7b03662. Epub 2018 Jan 23.

Occurrence and Tissue Distribution of Novel Perfluoroether Carboxylic and Sulfonic Acids and Legacy Per/Polyfluoroalkyl Substances in Black-Spotted Frog (Pelophylax nigromaculatus).

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Abstract

Research on perfluoroalkyl substances (PFASs) continues to grow. However, very little is known about these substances in amphibians. Here we report for the first time on the occurrence, tissue distribution, and bioaccumulation of two novel PFASs, chlorinated polyfluorinated ether sulfonic acid (6:2 Cl-PFESA) and hexafluoropropylene oxide trimer acid (HFPO-TA), in the black-spotted frog (Pelophylax nigromaculatus) from China. Frogs from cities with large-scale fluorochemical industries had significantly greater liver ∑PFAS levels (mean 54.28 ng/g in Changshu; 31.22 ng/g in Huantai) than those from cities without similar industry (9.91 ng/g in Zhoushan; 7.68 ng/g in Quzhou). Females had significantly lower liver PFAS levels

than males, and older frogs tended to have lower PFAS levels than younger frogs. Skin, liver, and muscle contributed nearly 80% to the whole body burden of 6:2 Cl-PFESA in males, whereas the female ovary alone accounted for 58.4%. These results suggest substantial maternal transfer of 6:2 Cl-PFESA to eggs, raising concern regarding its developmental toxicity on frogs and other species. The bioaccumulation factor results (6:2 Cl-PFESA > PFOS; HFPO-TA > PFOA) suggest a stronger accumulative potential in the black-spotted frog for these alternative substances compared to their predecessors. Future studies on their toxicity and ecology risk are warranted.

PMID: 29310433

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Decreased macrophage phagocytic function due to xenobiotic exposures in vitro, difference in sensitivity between various macrophage models.

Berntsen HF[1], Bølling AK[2], Bjørklund CG[3], Zimmer K[3], Ropstad E[3], Zienolddiny S[4], Becher R[2], Holme JA[2], Dirven H[5], Nygaard UC[5], Bodin J[6].

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Abstract

Both autoimmune disease prevalence and exposure to immunotoxic chemicals have increased the last decades. As a first screening of immunotoxic chemicals possibly affecting development of autoimmunity through attenuated macrophage function, we demonstrate a promising model measuring macrophage function in isolated peritoneal macrophages (PCM) from Wistar rats and C57Bl/6 mice. Immunotoxic

effects of bisphenol A (BPA) and a selection of perfluoroalkyl acids (PFAAs) were analysed in vitro assessing phagocytic function of macrophages from different sources. Phagocytosis was reduced in PCM of C57Bl/6 mice and Wistar rats after BPA and perfluoroundecanoic acid (PFUnDA) exposure, but not in macrophages derived from human and rat monocyte derived macrophages (MDM). On the other hand, in vitro exposure to mixtures of persistent organic pollutants (POPs) showed similar reductions in rat PCM and rat and human MDM phagocytosis. Reduced phagocytosis was partly due to cytotoxicity. PCM isolated from non-obese diabetic (NOD) mice, interleukin 1α/β knockout (IL-1KO) mice and new-born rats were less sensitive to the xenobiotics than PCM from adult wild type rodents. Finally, in vivo studies with NOD mice verified that POP exposure also decreased the number of pancreatic macrophages in pancreatic islets, reflecting early signs of autoimmunity development, similarly as previously described for BPA.

PMID: 29258957

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28. Chem Biol Interact. 2018 Feb 1;281:1-10. doi: 10.1016/j.cbi.2017.12.021. Epub 2017 Dec 14.

Cellular accumulation and lipid binding of perfluorinated alkylated substances (PFASs) - A comparison with lysosomotropic drugs.

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Abstract

Many chemicals accumulate in organisms through a variety of different mechanisms. Cationic amphiphilic drugs (CADs) accumulate in lysosomes and bind to membranes causing phospholipidosis, whereas many lipophilic chemicals target adipose tissue. Perfluoroalkyl substances (PFASs) are widely used as surfactants, but many of them are highly bioaccumulating and persistent in the environment, making them notorious environmental toxicants. Understanding the mechanisms of their bioaccumulation is, therefore, important for their regulation and substitution with new, less harmful chemicals. We compared the highly bioaccumulative perfluorooctanesulfonic acid PFOS to its three less bioaccumulative alternatives perfluorooctanoic acid (PFOA), perfluorohexanoic acid (PFHxA) and perfluorobutane sulfonic acid (PFBS), in their ability to accumulate and remain in lung epithelial cells (NCI-H292) and adipocytes (3T3-L1K) in vitro. As a reference point we tested a set of cationic amphiphilic drugs (CADs), known to highly accumulate in cells and strongly bind to phospholipids, together with their respective non-CAD controls. Finally, all compounds were examined for their ability to bind to neutral lipids and phospholipids in cell-

free systems. Cellular accumulation and retention of the test compounds were highly correlated between the lung epithelial cells and adipocytes. Interestingly, although an anion itself, intensities of PFOS accumulation and retention in cells were comparable to those of CAD compounds, but PFOS failed to induce phospholipidosis or alter lysosomal volume. Compared to other lipophilicity measures, phospholipophilicity shows the highest correlation (R^2 = 0.75) to cellular accumulation data in both cell types and best distinguishes between high and low accumulating compounds. This indicates that binding to phospholipids may be the most important component in driving high cellular accumulation in lung epithelial cells, as well as in adipocytes, and for both CADs and bioaccumulating PFASs. Obtained continuous PLS models based on compound's affinity for phospholipids and neutral lipids can be used as good prediction models of cellular accumulation and retention of PFASs and CADs.

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PMID: 29248446 [Indexed for MEDLINE]

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29. Aquat Toxicol. 2018 Feb;195:24-32. doi: 10.1016/j.aquatox.2017.12.002. Epub 2017 Dec 7.

6:2 fluorotelomer sulfonamide alkylbetaine (6:2 FTAB), a novel perfluorooctane sulfonate alternative, induced developmental toxicity in zebrafish embryos.

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Abstract

6:2 fluorotelomer sulfonamide alkylbetaine (6:2 FTAB) is a major component of Forafac®1157, a novel perfluorooctane sulfonate (PFOS) alternative used globally in aqueous film forming foams (AFFFs).

Although 6:2 FTAB has been recently detected in the aquatic environment, its toxic effects on aquatic organisms remain unclear. Here, zebrafish embryos were exposed to various concentrations of 6:2 FTAB (0, 5, 10, 20, 40, 60, 80, and 100 mg/L) from 6 to 120 h post-fertilization (hpf) to investigate its developmental toxicity and possible mechanism of action. Results showed that exposure to 40 mg/L or higher concentrations of 6:2 FTAB significantly decreased the survival percentage and increased the malformation percentage. The median lethal concentration (LC_{50}) at 120 hpf was 43.73 ± 3.24 mg/L, and the corresponding benchmark dose lower limit (BMDL) of lethal effect was 33.79 mg/L. These values were both higher than those for PFOS, supporting the notion that 6:2 FTAB is less toxic than PFOS to zebrafish embryos. The most common developmental defect in 6:2 FTAB-treated embryos was rough-edged skin/fins. TUNEL assay showed that 6:2 FTAB exposure induced cell apoptosis in the tail region compared with that of the control, which might explain the rough-edged skin/fins. The increased transcriptional levels of p53, bax, and apaf1 and the increased activities of caspase-3, -8, and -9 provided further evidence of 6:2 FTAB-induced apoptosis. We also analyzed the effects of 6:2 FTAB on oxidative stress and the immune system. Results showed that reactive oxygen species and malondialdehyde accumulated in concentration-dependent manners after exposure to 6:2 FTAB, and antioxidant enzyme activities (catalase and glutathione peroxidase) also changed. Exposure to 6:2 FTAB also altered the transcriptional levels of ccl1, il-1β, il-8, tnfα, ifn, and cxcl-c1c, which play important roles in the innate immune system. Collectively, our data suggest that 6:2 FTAB exposure can induce cell apoptosis, oxidative stress, and immunotoxicity, thus highlighting the developmental toxicity of 6:2 FTAB in zebrafish embryos.

PMID: 29247975

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30. Water Res. 2018 Feb 1;129:509-519. doi: 10.1016/j.watres.2017.10.067. Epub 2017 Oct 30.

Degradation of perfluorinated compounds by sulfate radicals - New mechanistic aspects and economical considerations.

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Abstract

Perfluorinated organic compounds (PFC) are an important group of pollutants, which are difficult to be degraded in conventional water treatment. Even hydroxyl radical based processes are not capable to degrade these compounds. Sulfate radicals can oxidize a group of PFC, i.e., perfluorinated carboxylic (PFCAs) acids. However, information in literature on kinetics and reaction mechanism is largely based on model simulations which are prone to errors. The present study provides mechanistic insights based on product formation, material balances, competition kinetics experiments and quantum chemical calculations. Furthermore, energy requirements for sulfate radical based degradation of PFCA is evaluated in the present study. PFCAs can be partly mineralized in chain reactions initiated by sulfate radicals (SO_4^{-}). The perfluorinated acetic acid (TFA), propionic acid, and butanoic acid are largely degraded in a primary reaction with sulfate radicals. In case of PFCA with a chain length of > 4 carbons low yields of PFCA products were observed. Regarding reaction kinetics sulfate radicals react very slow with PFCAs ($\approx 10^4$ M^{-1} s^{-1}). Thus, the energy demand required for generation of SO_4^{-} by photolysis of $S_2O_8^{2-}$ (UV/$S_2O_8^{2-}$) is very high. A 90% degradation of a PFCA by UV/$S_2O_8^{2-}$ was estimated to be 55 kW h m^{-3} in pure water.

PMID: 29247911

Similar articles

31. Environ Int. 2018 Feb;111:224-231. doi: 10.1016/j.envint.2017.11.031. Epub 2017 Dec 20.

Prenatal and childhood perfluoroalkyl substances exposures and children's reading skills at ages 5 and 8years.

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Abstract

BACKGROUND:

Exposure to perfluoroalkyl substances (PFASs) may impact children's neurodevelopment.

OBJECTIVE:

To examine the association of prenatal and early childhood serum PFAS concentrations with children's reading skills at ages 5 and 8years.

METHODS:

We used data from 167 mother-child pairs recruited during pregnancy (2003-2006) in Cincinnati, OH, quantified prenatal serum PFAS concentrations at 16±3weeks of gestation and childhood sera at ages 3 and 8years. We assessed children's reading skills using Woodcock-Johnson Tests of Achievement III at age 5years and Wide Range Achievement Test-4 at age 8years. We used general linear regression to quantify the covariate-adjusted associations between natural log-transformed PFAS concentrations and reading skills, and used multiple informant model to identify the potential windows of susceptibility.

RESULTS:

Median serum PFASs concentrations were PFOS>PFOA>PFHxS>PFNA in prenatal, 3-year, and 8-year children. The covariate-adjusted general linear regression identified positive associations between serum PFOA, PFOS and PFNA concentrations and children's reading scores at ages 5 and 8years, but no association between any PFHxS concentration and reading skills. The multiple informant model showed: a) Prenatal PFOA was positively associated with higher children's scores in Reading Composite (β: 4.0, 95% CI: 0.6, 7.4 per a natural log unit increase in exposure) and Sentence Comprehension (β: 4.2, 95% CI: 0.5, 8.0) at age 8years; b) 3-year PFOA was positively associated with higher children's scores in Brief Reading (β: 7.3, 95% CI: 0.9, 13.8), Letter Word Identification (β: 6.6, 95% CI: 1.1, 12.0), and Passage Comprehension (β: 5.9, 95% CI: 1.5, 10.2) at age 5years; c) 8-year PFOA was positively associated with higher children's Word Reading scores (β: 5.8, 95% CI: 0.8, 10.7) at age 8years. Prenatal PFOS and PFNA were positively associated with children's reading abilities at age 5years, but not at age 8years; 3-year PFOS and PFNA were positively associated with reading scores at age 5years. But PFHxS concentrations, at any exposure windows, were not associated with reading skills.

CONCLUSION:

Prenatal and childhood serum PFOA, PFOS and PFNA concentrations were positively associated with better children's reading skills at ages 5 and 8years, but no association was found between serum PFHxS and reading skills.

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PMID: 29241079
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32. Environ Int. 2018 Feb;111:191-199. doi: 10.1016/j.envint.2017.12.002. Epub 2017 Dec 20.

Perfluoroalkyl acid levels in first-time mothers in relation to offspring weight gain and growth.

Gyllenhammar I[1], Diderholm B[2], Gustafsson J[2], Berger U[3], Ridefelt P[4], Benskin JP[5], Lignell S[6], Lampa E[7], Glynn A[6].

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Abstract

We investigated if maternal body burdens of perfluoroalkyl acids (PFAAs) at the time of delivery are associated with birth outcome and if early life exposure (in utero/nursing) is associated with early childhood growth and weight gain. Maternal PFAA body burdens were estimated by analysis of serum samples from mothers living in Uppsala County, Sweden (POPUP), sampled three weeks after delivery between 1996 and 2011. Data on child length and weight were collected from medical records and converted into standard deviation scores (SDS). Multiple linear regression models with appropriate covariates were used to analyze associations between maternal PFAA levels and birth outcomes (n=381). After birth Generalized Least Squares models were used to analyze associations between maternal PFAA and child growth (n=200). Inverse associations were found between maternal levels of perfluorononanoic acid (PFNA),

perfluorodecanoic acid (PFDA), and perfluoroundecanoic acid (PFUnDA), and birth weight SDS with a change of -0.10 to -0.18 weight SDS for an inter-quartile range (IQR) increase in ng/g PFAA. After birth, weight and length SDS were not significantly associated with maternal PFAA. However, BMI SDS was significantly associated with PFOA, PFNA, and PFHxS at 3 and 4years of age, and with PFOS at 4 and 5years of age. If causal, these associations suggest that PFAA affects fetal and childhood body development in different directions.

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PMID: 29223808
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33. Environ Sci Pollut Res Int. 2018 Feb;25(5):4787-4793. doi: 10.1007/s11356-017-0872-7. Epub 2017 Dec 2.

Adverse bioeffect of perfluorooctanoic acid on liver metabolic function in mice.

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Abstract

Perfluorooctanoic acid (PFOA), a kind of manufactured material, is widely accumulated around environmental system and into wildlife, including human beings. Toxicologically, PFOA induces hepatomegaly (liver enlargement) in the dose- and time-dependent manners. However, biological mechanism of hepatotoxicity warrants to be further investigated. In the present study, mature male mice were exposed to dosed PFOA for 21 days before conducting biochemical tests and immunoassays. As results, decreased fast blood glucose and elevated insulin contents were observed in PFOA-dosed mice. In addition, PFOA-dosed mice resulted in increased liver functional enzymes (GPT, GOT) in serum. And lipid contents (TG, lipoproteins) in serum and liver were changed

abnormally. As shown in immunohistochemistry, increased insulin- and poly (ADP-ribose) polymerase (PARP)-positive cells were showed in PFOA-exposed pancreatic tissues. Moreover, CD36-positive cells were increased in PFOA-exposed livers, while ApoB-labeled cells were reduced. Further, immunoblot data showed that hepatocellular fibroblast growth factor 21 (FGF21) in PFOA-exposed liver was down-regulated dose-dependently. Taken together, our preliminary findings demonstrated that PFOA-induced hepatocellular lipotoxicity may be linked to impairing lipid-regulated proteins, as well as inducing insulin expression from pancreatic tissue.

PMID: 29198028

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34. J Hazard Mater. 2018 Feb 15;344:950-957. doi: 10.1016/j.jhazmat.2017.11.048. Epub 2017 Nov 28.

Photocatalytic degradation and mineralization of perfluorooctanoic acid (PFOA) using a composite TiO2 -rGO catalyst.

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Abstract

The inherent resistance of perfluoroalkyl substances (PFASs) to biological degradation makes necessary to develop advanced technologies for the abatement of this group of hazardous substances. The present work investigated the photocatalytic decomposition of perfluorooctanoic acid (PFOA) using a composite catalyst based on TiO_2 and reduced graphene oxide (95% TiO_2/5% rGO) that was synthesized using a facile hydrothermal method. The efficient photoactivity of the TiO_2-rGO ($0.1 gL^{-1}$) composite was confirmed for PFOA ($0.24 mmolL^{-1}$) degradation that reached 93±7% after 12h of UV-vis irradiation using a medium pressure mercury lamp, a great improvement compared to the TiO_2 photocatalysis (24±11% PFOA removal) and direct photolysis (58±9%). These findings indicate that rGO provided the suited properties of TiO_2-rGO, possibly as a result of acting as electron acceptor and avoiding the high recombination electron/hole pairs. The

release of fluoride and the formation of shorter-chain perfluorocarboxilyc acids, that were progressively eliminated in a good match with the analysed reduction of total organic carbon, is consistent with a step-by-step PFOA decomposition via photogenerated hydroxyl radicals. Finally, the apparent first order rate constants of the TiO_2-rGO UV-vis PFOA decompositions, and the intermediate perfluorcarboxylic acids were found to increase as the length of the carbon chain was shorter.

PMID: 29197229

Similar articles

35. Environ Sci Pollut Res Int. 2018 Feb;25(5):4524-4543. doi: 10.1007/s11356-017-0828-y. Epub 2017 Nov 29.

Observed differentials in the levels of selected environmental contaminants among Mexican and other Hispanic American children, adolescents, adults, and senior citizens.

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Abstract

Starting with the 2007-2008 cycle, the National Health and Nutrition Examination Survey (NHANES) also oversampled Hispanics other than Mexicans (OHISP) making it possible to treat OHISP as a separate demographic group along with Mexican Americans (MAs), non-Hispanic whites (NHWs), and non-Hispanic blacks (NHBs). Yet, more often than not, OHISP have been merged with MA to form an all-Hispanic demographic group (HISP) thus limiting comparisons between NHW, NHB, and HISP. Consequently, for the first time, this study was undertaken to evaluate differences in the observed levels of selected environmental contaminants between MA and OHISP from five groups of environmental contaminants, namely, polycyclic aromatic hydrocarbons (PAHs), iodine uptake inhibitors (IUIs), environmental phenols (EPHs), priority pesticides (PPs), and perfluoroalkyl acids (PFAAs). Data for 2007-2010 from NHANES were used to conduct this study. OHISP children born in USA had higher levels of selected PAH metabolites than USA-born MA, and Mexican-born MA adolescents had higher levels of selected PAH metabolites than USA-born MA adolescents. USA-born adolescent MA had higher levels of selected parabens than USA-born adolescent OHISP, and OHISP adults born in another Spanish-speaking country had higher levels of selected parabens than USA-born

OHISP adults. USA-born MA adults and seniors had higher levels of selected dichlorophenols than Mexico-born MA adults and seniors, respectively. Females had higher levels of selected PAH metabolites, EPHs, and PPs than males among children, adolescents, adults, and seniors, but the reverse was true for the levels of selected IUIs and PFAAs among adolescents and seniors. Smokers had higher levels of almost all PAH metabolites than non-smokers for adolescents, adults, and seniors. The same was true for urinary thiocynate for adolescents, adults, and seniors. OHISP is a multiracial multiethnic demographic group substantially different from MA with possibly different smoking behavior and with possibly differential levels of exposure to certain environmental contaminants and as such should be treated as a demographic group by itself.

PMID: 29188596

Similar articles

36. Environ Res. 2018 Feb;161:268-275. doi: 10.1016/j.envres.2017.11.018. Epub 2017 Nov 21.

Contribution of diet and other factors to the observed levels of selected perfluoroalkyl acids in serum among US children aged 3-11 years.

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Abstract

Data from National Health and Nutrition Examination Survey for 2013-2014 for children aged 3-11 years (N = 639) were analyzed to evaluate the contribution of diet and other factors in variability associated with the observed levels of seven perfluoroalkyl acids in serum, namely, 2(N-methyl-perfluorooctane sulfonamide) acetic acid (MPAH), perfluorodecanoic acid (PFDE), perfluorononanoic acid (PFNA), perflurorohexane sulfonic acid (PFHxS), linear isomer of PFOA (NPFOA), linear isomer of PFOS (NPFOS), and monomethyl isomer of PFOS (MPFOS). Diet accounted for a low of 18.6% of the total explained variance in the adjusted levels of NPFOA and a high of 72.3% for PFNA. Consumption of meat other than fish and poultry was associated with increased levels of NPFOS ($\beta = 0.00035$, $p < 0.01$) and MPFOS ($\beta = 0.00027$, $p=0.02$). However, consumption of fish was associated with decreased levels of PFDE ($\beta = -0.00058$, $p=0.01$). Consumption of eggs was associated with higher levels of PFDE ($\beta = 0.00105$, $p=0.04$). Higher levels of PFHxS were associated with consumption of fruits

and juices (β = 0.00019, p = 0.03). Exposure to environmental tobacco smoke in indoor environments other than home was associated with 12.6% increase in the levels of NPFOA. Boys had higher adjusted geometric mean (AGM) than girls for MPAH (0.88 vs. 0.70ng/mL, p = 0.04) and NPFOS (2.73 vs. 2.27ng/mL, p = 0.04). Non-Hispanic white had higher AGMs than Hispanics for MPAH (0.15 vs. 0.07, p < 0.01), for NPFOA (1.98 vs. 1.64ng/mL, p < 0.01), and MPFOS (1.39 vs. 1.18ng/mL, p = 0.03). Non-Hispanic white also had higher AGM than non-Hispanic Asians and others for PFHxS (0.99 vs. 0.63ng/mL, p < 0.01) and NPFOA (1.98 vs. 1.53ng/mL, p < 0.01).

PMID: 29169101

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37. Environ Res. 2018 Feb;161:236-247. doi: 10.1016/j.envres.2017.11.017.

Assessing the effects of seawater temperature and pH on the bioaccumulation of emerging chemical contaminants in marine bivalves.

Maulvault AL[1], Camacho C[2], Barbosa V[2], Alves R[2], Anacleto P[3], Fogaça F[4], Kwadijk C[5], Kotterman M[5], Cunha SC[6], Fernandes JO[6], Rasmussen RR[7], Sloth JJ[7], Aznar-Alemany Ò[8], Eljarrat E[8], Barceló D[8], Marques A[2].

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Abstract

Emerging chemical contaminants [e.g. toxic metals speciation, flame retardants (FRs) and perfluorinated compounds (PFCs), among others], that have not been historically recognized as pollutants nor their toxicological hazards, are increasingly more present in the marine environment. Furthermore, the effects of environmental conditions (e.g. temperature and pH) on bioaccumulation and elimination mechanisms of these emerging contaminants in marine biota have been poorly studied until now. In this context, the aim of this study was to assess, for the first time, the effect of warmer seawater temperatures ($\Delta = +4°C$) and lower pH levels ($\Delta = -0.4$ pH units), acting alone or combined, on the bioaccumulation and elimination of emerging FRs (dechloranes 602, 603 and 604, and TBBPA), inorganic arsenic (iAs), and PFCs (PFOA and PFOS) in two estuarine bivalve species (Mytilus galloprovincialis and Ruditapes philippinarum). Overall, results showed that warming alone or combined with acidification promoted the bioaccumulation of some compounds (i.e. dechloranes 602, 604, TBBPA), but also facilitated the elimination of others (i.e. iAs, TBBPA). Similarly, lower pH also resulted in higher levels of dechloranes, as well as enhanced iAs, PFOA and PFOS elimination. Data also suggests that, when both abiotic stressors are combined, bivalves' capacity to accumulate contaminants may be time-dependent, considering significantly drastic increase observed with Dec 602 and TBBPA, during the last 10 days of exposure, when compared to reference conditions. Such changes in contaminants' bioaccumulation/elimination patterns also suggest a potential increase of human health risks of some compounds, if the climate continues changing as forecasted. Therefore, this first study pointed out the urgent need for further research on the effects of abiotic conditions on emerging contaminants kinetics, to adequately estimate the potential toxicological hazards associated to these compounds and develop recommendations/regulations for their presence in seafood, considering the prevailing environmental conditions expected in tomorrow's ocean.

PMID: 29169098

Similar articles

38. Environ Int. 2018 Feb;111:1-13. doi: 10.1016/j.envint.2017.11.008. Epub 2017 Nov 20.

Early life exposure to per- and polyfluoroalkyl substances and mid-

childhood lipid and alanine aminotransferase levels.

Mora AM[1], Fleisch AF[2], Rifas-Shiman SL[3], Woo Baidal JA[4], Pardo L[5], Webster TF[6], Calafat AM[7], Ye X[7], Oken E[8], Sagiv SK[9].

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Abstract

BACKGROUND:

Growing evidence suggests that exposure to per- and polyfluoroalkyl substances (PFASs) may disrupt lipid homeostasis and liver function, but data in children are limited.

OBJECTIVE:

We examined the association of prenatal and mid-childhood PFAS exposure with lipids and alanine aminotransferase (ALT) levels in children.

METHODS:

We studied 682 mother-child pairs from a Boston-area pre-birth cohort. We quantified PFASs in maternal plasma collected in pregnancy (median 9.7weeks gestation, 1999-2002) and in child plasma collected in mid-childhood (median age 7.7years, 2007-2010). In mid-childhood we also measured fasting total (TC), high-density lipoprotein cholesterol (HDL-C), triglycerides (TG), and ALT. We then derived low-density lipoprotein cholesterol (LDL-C) from TC, HDL-C, and TG using the Friedewald formula.

RESULTS:

Median (interquartile range, IQR) perfluorooctane sulfonate (PFOS), perfluorooctanoate (PFOA), and perfluorodecanoate (PFDeA) concentrations in child plasma were 6.2 (5.5), 4.3 (3.0), and 0.3 (0.3) ng/mL, respectively. Among girls, higher child PFOS, PFOA, and PFDeA concentrations were associated with detrimental changes in the lipid profile, including higher TC and/or LDL-C [e.g., β per IQR increment in PFOS=4.0mg/dL (95% CI: 0.3, 7.8) for TC and 2.6mg/dL (-0.5, 5.8) for LDL-C]. However, among both boys and girls, higher plasma concentrations of these child PFASs were also associated with higher HDL-C, which predicts better cardiovascular health, and slightly lower ALT, which may indicate better liver function. Prenatal PFAS concentrations were also modestly associated with improved childhood lipid and ALT levels.

CONCLUSIONS:

Our data suggest that prenatal and mid-childhood PFAS exposure may be associated with modest, but somewhat conflicting changes in the lipid profile and ALT levels in children.

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PMID: 29156323
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39. Chemosphere. 2018 Feb;193:358-364. doi: 10.1016/j.chemosphere.2017.10.082. Epub 2017 Oct 27.

Detection of perfluoroalkyl acids and sulphonates in Italian eel samples by HPLC-HRMS Orbitrap.

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Abstract

Perfluoroalkyl substances (PFASs) contain one or more carbon-bound hydrogens substituted by fluorine. Since the 1950s, these compounds have been used to manufacture fat- and water-resistant fabrics, paper and food containers, and to produce photographic films, firefighting foams, detergents and insecticides. The widespread use and global distribution of PFASs, have led to their accumulation in the environment. Food, particularly fish and other seafood, is considered the main route of human exposure to PFASs. Consequently, the European Food Safety Authority (EFSA) recommends that more data be collected, to build a database on the contamination levels of the individual PFASs in food, to evaluate a reliable chronic risk to the European consumers. This requires high-sensitivity analytical methods, to increase the number of quantifiable samples and, thereby, improve the credibility of exposure assessments. In this context, the aim of the present research is to develop and validate a sensitive and specific method based on high-performance liquid chromatography-high resolution mass spectrometry (HPLC-HRMS) analysis, to monitor the presence of 16 PFASs in Italian eels (Anguilla anguilla) from the Italian Lake Garda. The detection limits (CCα) and detection capability (CCβ) in the order of pg g^{-1}, the recoveries between 80 and 101% and the other validation parameters fulfilled the requirements of Commission Decision 657/2002/EC. The identification and quantification of PFASs, up to 11 in the same sample, showed a similar distribution among 90 eels. Perfluorooctane sulphonic acid (PFOS) and perfluorobutanoic acid (PFBA) were the analytes more frequently found in the eel samples (94 and 82%, respectively).

PMID: 29149712

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40. Talanta. 2018 Feb 1;178:955-961. doi: 10.1016/j.talanta.2017.10.034. Epub 2017 Oct 21.

A High Sensitivity Biosensor to detect the presence of perfluorinated compounds in environment.

Cennamo N[1], Zeni L[2], Tortora P[3], Regonesi ME[3], Giusti A[4], Staiano M[5], D'Auria S[6], Varriale A[5].

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Abstract

A novel surface plasmon resonance (SPR) optical fiber biosensor, able to bind perfluorooctanoate and perfluorooctanesulfonate compounds, is presented. In the first step, an ad hoc antibody compound has been designed, produced and tested by ELISA, then, in the second step, the gold surface of a plastic optical fiber sensor has been derivatizated and functionalized with this new bio-receptor, able to bind target analytes with high affinity and selectivity. The experimental data have shown that the developed SPR optical fiber biosensor makes it possible to detect these compounds. One advantage of this approach stems from the possibility to monitor the perfluorinated compounds in the environment exploiting the remote sensing capability offered by the optical fibers. The measurements were performed in laboratory, also exploiting matrices mimicking the real environment. The limit of detection of the assay was 0.21ppb, a value that is lower than the maximum residue limit fixed by the European Union regulations.

PMID: 29136923

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41. Talanta. 2018 Feb 1;178:129-133. doi: 10.1016/j.talanta.2017.09.008. Epub 2017 Sep 6.

Carboxylated carbon nanospheres as solid-phase extraction adsorbents for the determination of perfluorinated compounds in water samples by liquid chromatography-tandem mass spectrometry.

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Erratum in

- Corrigendum to, Carboxylated carbon nanospheres as solid-phase extraction adsorbents for the determination of perfluorinated compounds in water samples by liquid chromatography-tandem mass spectrometry' [Talanta 178 (2018) 129-133]. [Talanta. 2018]

Abstract

This work demonstrates the extraction potential of carboxylated carbon nanospheres (CNSs-COOH) for solid-phase extraction of perfluoroalkyl acids (PFAAs) for the first time. Six PFAAs, including perfluorohexanesulfonate (PFHxS), perfluoroheptanoic acid (PFHpA), perfluorooctanoic acid (PFOA), perfluorooctanoic sulfonic (PFOS), perfluorononanoic acid (PFNA) and perfluorodecanoic acid (PFDA), were quantitatively

adsorbed on a CNSs-COOH-packed cartridge; then, the PFAAs retained on the adsorbent were quantitatively eluted with an optimized volume of acetone (pH = 10). Finally, the desorbed PFAAs were determined by liquid chromatography-tandem mass spectrometry. Important relevant factors, such as the eluant and its volume, sample pH, amount of CNSs-COOH, sample flow rate and sample volume were optimized in detail. Under the optimized conditions, low limits of detection (0.01-1.2ngL^{-1}), wide linear range (0.50-200ngL^{-1}) and good repeatability (2.4-5.1%) and good reproducibility (3.7-8.8%) were obtained. The proposed method was applied to analyze the six PFAAs in real environmental water samples, and satisfactory results were achieved. All of these results showed that CNSs-COOH will be a good choice for the pre-concentration and analysis of target PFAAs at trace levels in environmental water samples in the future.

PMID: 29136802

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Modulation of wettability, gradient and adhesion on self-assembled monolayer by counterion exchange and pH.

Mosnáček J[1], Popelka A[2], Osicka J[2], Filip J[3], Ilcikova M[1], Kollar J[1], Yousaf AB[2], Bertok T[4], Tkac J[4], Kasak P[5].

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Abstract

In this study, two quaternary ammonium salts derived from l-lipoic acid were applied for self-assembled monolayers formation on rough structured gold surface. The derivatives differ in functionality since one possesses simple quaternary ammonium group whereas the other one is carboxybetaine ester containing quaternary ammonium group with pH hydrolysable ester group as a pendant. The response of surface wettability to ion exchange between Cl^- and perfluorooctanoate, kinetics and gradient wettability were examined by water contact angle measurement and confirmed by X-ray photoelectron spectroscopy. Furthermore, adhesion forces related to applied counterion on the entire surface and after hydrolysis were investigated by atomic force microscopy measurement at nanometer scales. A dramatic change in wettability upon counterion exchange from superhydrophilic for Cl^- to very or superhydrophobic for perfluorooctanoate in a repeatable manner was observed for both derivatives. Kinetics of counterion exchanges revealed faster hydration of simple quaternary derivate. The wettability gradient could be designed from superhydrophobic to superhydrophilic either in a reversible manner by simple immersion of the modified surface in a counterion solution modulated by ionic strength or in an irreversible manner for carboxybetaine ester derivate by time-controlled hydrolysis to charge balanced carboxybetaine.

PMID: 29096112

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43. J Colloid Interface Sci. 2018 Feb 1;511:474-481. doi: 10.1016/j.jcis.2017.09.102. Epub 2017 Sep 28.

Interactions of perfluoroalkyl substances with a phospholipid bilayer studied by neutron reflectometry.

Nouhi S[1], Ahrens L[2], Campos Pereira H[3], Hughes AV[4], Campana M[4], Gutfreund P[5], Palsson GK[5], Vorobiev A[5], Hellsing MS[6].

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Abstract

The interactions between perfluoroalkyl substances (PFASs) and a phospholipid bilayer (1,2-dimyristoyl-sn-glycero-3-phosphocholine) were investigated at the molecular level using neutron reflectometry. Representative PFASs with different chain length and functional groups were selected in this study including: perfluorobutane sulfonate (PFBS), perfluorohexanoate (PFHxA), perfluorohexane sulfonate (PFHxS), perfluorononanoate (PFNA), perfluorooctane sulfonate (PFOS), and perfluorooctane sulfonamide (FOSA). All PFASs were found to interact with the bilayer by incorporation, indicating PFAS ability to accumulate once ingested or taken up by organisms. The interactions were observed to increase with chain length and vary with the functional group as SO_2NH_2(FOSA)>SO_2O^-(PFOS)>COO^-(PFNA). The PFAS hydrophobicity, which is strongly correlated with perfluorocarbon chain length, was found to strongly influence the interactions. Longer chain PFASs showed higher tendency to penetrate into the bilayer compared to the short-chain compounds. The incorporated PFASs could for all substances but one (PFNA) be removed from the lipid membrane by gentle rinsing with water ($2mLmin^{-1}$). Although short-chain PFASs have been suggested to be the potentially less bioaccumulative alternative, we found that in high enough concentrations they can also disturb the bilayer. The roughness and disorder of the bilayer was observed to increase as the concentration of PFASs increased (in particular for the high concentrations of short-chain substances i.e. PFHxA and PFBS), which can be an indication of aggregation of PFASs in the bilayer.
PMID: 29073553
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44. Arch Toxicol. 2018 Feb;92(2):705-716. doi: 10.1007/s00204-017-2077-8. Epub 2017 Oct 23.

PFOS induces proliferation, cell-cycle progression, and malignant phenotype in human breast epithelial cells.

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Abstract

Perfluorooctanesulfonic acid (PFOS) is a synthetic fluorosurfactant widely used in the industry and a prominent environmental toxicant. PFOS is persistent, bioaccumulative, and toxic to mammalian species. Growing evidence suggests that PFOS has the potential to interfere with estrogen homeostasis, posing a risk of endocrine-disrupting effects. Recently, concerns about a potential link between PFOS and breast cancer have been raised, but the mechanisms underlying its actions as a potential carcinogen are unknown. By utilizing cell proliferation assays, flow cytometry, immunocytochemistry, and cell migration/invasion assays, we examined the potentially tumorigenic activity of PFOS (100 nM-1 mM) in MCF-10A breast cell line. The results showed that the growth of MCF-10A cells exposed to 1 and 10 μM PFOS was higher compared to that of the control. Mechanistic studies using 10 μM PFOS demonstrated that the compound promotes MCF-10A proliferation through accelerating G_0/G_1-to-S phase transition of the cell cycle after 24, 48, and 72 h of treatment. In addition, PFOS exposure increased CDK4 and decreased p27, p21, and p53 levels in the cells. Importantly, treatment with 10 μM PFOS for 72 h also stimulated MCF-10A cell migration and invasion, illustrating its capability to induce neoplastic transformation of human breast epithelial cells. Our experimental results suggest that exposure to low levels of PFOS might be a potential risk factor in human breast cancer initiation and development.

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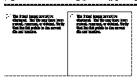

45. Environ Pollut. 2018 Feb;233:8-15. doi: 10.1016/j.envpol.2017.10.039. Epub 2017 Oct 16.

Bioaccumulation and effects of novel chlorinated polyfluorinated ether sulfonate in freshwater alga Scenedesmus obliquus.

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Abstract

Chlorinated polyfluorinated ether sulfonate (Cl-PFESA) is a novel alternative compound for perfluorooctane sulfonate (PFOS), with its environmental risk not well known. The bioaccumulation and toxic effects of Cl-PFESA in the freshwater alga is crucial for the understanding of its potential hazards to the aquatic environment. Scenedesmus obliquus was exposed to Cl-PFESA at ng L^{-1} to mg L^{-1}, with the exposure regime beginning at the environmentally relevant level. The total log BAF of Cl-PFESA in S. obliquus was 4.66, higher than the reported log BAF of PFOS in the freshwater plankton (2.2-3.2). Cl-PFESA adsorbed to the cell surface accounted for 33.5-68.3% of the total concentrations. The IC50 of Cl-PFESA to algal growth was estimated to be 40.3 mg L^{-1}. Significant changes in algal growth rate and chlorophyll a/b contents were observed at 11.6 mg L^{-1} and 13.4 mg L^{-1} of Cl-PFESA, respectively. The sample cell membrane permeability, measured by the fluorescein diacetate hydrolyzation, was increased by Cl-PFESA at 5.42 mg L^{-1}. The mitochondrial membrane potential, measured by Rh123 staining, was also increased, indicating the hyperpolarization induced by Cl-PFESA. The increasing ROS and MDA contents, along with the enhanced SOD, CAT activity, and GSH contents, suggested that Cl-PFESA caused oxidative damage in the algal cells. It is less possible that current Cl-PFESA pollution in surface water posed obvious toxic effects on the green algae. However, the bioaccumulation of Cl-PFESA in algae would contribute to its biomagnification in the aquatic food chain and its effects on membrane property could potentially increase the accessibility and toxicity of other coexisting pollutants.

PMID: 29049944

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46. Int Arch Occup Environ Health. 2018 Feb;91(2):145-154. doi: 10.1007/s00420-017-1267-2. Epub 2017 Oct 12.

Occupational exposure to perfluoroalkyl substances and serum levels of perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) in an

aging population from upstate New York: a retrospective cohort study.

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Abstract

PURPOSE:

Perfluoroalkyl substances (PFASs) are environmentally persistent amphiphilic compounds. Exposure to two PFASs, perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) is linked to specific occupations and industries. This study examines the contribution of past occupational PFAS exposure to serum PFOS and PFOA levels among 154 older adults in New York State.

METHODS:

Serum PFOS and PFOA levels were compared to data from the National Health and Nutrition Examination Survey (NHANES). Potential occupational exposure to any PFAS was determined from work histories, reviewed by an industrial hygienist, and assessed in relation to current serum PFOS and PFOA levels using exposure probability, duration and cumulative exposure.

RESULTS:

We observed 25% higher serum PFOS and 80% higher PFOA levels in study participants compared to NHANES. No participants reported PFAS chemical manufacturing work, but n = 68 reported work in occupations and industries known to use PFASs. We found that participants with high cumulative workplace exposure had 34% higher serum PFOS levels compared to participants without occupational exposure, adjusted for age, sex and income. Serum PFOS levels were 26% higher for participants with longer occupational exposure durations. The probability of occupational PFAS exposure metric was not associated with serum PFOS. Serum PFOA was not associated with any measure of occupational exposure.

CONCLUSION:

Occupational exposure may contribute to total PFOS body burden in this study population, even among workers not directly involved in manufacturing PFASs. PFAS exposure assessments should evaluate the workplace as a potential source, even when workplace exposures are assumed to be low or moderate.

PMID: 29027000

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In search of a comprehensible set of endpoints for the routine monitoring of neurotoxicity in vertebrates: sensory perception and nerve transmission in zebrafish (Danio rerio) embryos.

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Abstract

In order to develop a test battery based on a variety of neurological systems in fish, three sensory systems (vision, olfaction, and lateral line) as well as nerve transmission (acetylcholine esterase) were analyzed in zebrafish (Danio rerio) embryos with respect to their suitability as a model for the screening of neurotoxic trace substances in aquatic ecosystems. As a selection of known or putative neurotoxic compounds, amidotrizoic acid, caffeine, cypermethrin, dichlorvos, 2,4-dinitrotoluene, 2,4-dichlorophenol, 4-nonylphenol, perfluorooctanoic acid, and perfluorooctane sulfonic acid were tested in the fish embryo test (OECD test guideline 236) to determine EC_{10} values, which were then used as maximum test concentration in subsequent neurotoxicity tests. Whereas inhibition of acetylcholinesterase was investigated biochemically both in vivo and in vitro (ex vivo), the sensory organs were studied in vivo by means of fluorescence microscopy and histopathology in 72- or 96-h-old zebrafish embryos, which are not regarded as protected developmental stages in Europe and thus - at least de jure - represent alternative test methods. Various steps of optimization allowed this neurotoxicity battery to identify neurotoxic potentials for five out of the nine compounds: Cypermethrin and dichlorvos could be shown to specifically modulate acetylcholinesterase activity; dichlorvos, 2,4-dichlorophenol, 4-nonylphenol, and perfluorooctane sulfonic acid led to a degeneration of neuromasts, whereas both vision and olfaction proved quite resistant to concentrations $\leq EC_{10}$ of all of the model neurotoxicants tested. Comparison of neurotoxic effects on acetylcholinesterase activity following in vivo and in vitro (ex vivo) exposure to cypermethrin provided hints to a specific enzyme-modulating activity of pyrethroid compounds. Enhancement of the neuromast assay by applying a simultaneous double-staining procedure and implementing a 4-scale scoring system (Stengel et al. 2017) led to reduced variability of results and better statistical resolution and allowed to differentiate location-dependent effects in single neuromasts. Since acetylcholinesterase inhibition and neuromast degeneration can be analyzed in 72- and 96-h-old zebrafish embryos exposed to neurotoxicants according to the standard protocol of the fish embryo toxicity test (OECD TG 236), the fish embryo toxicity test can be enhanced to serve as a sensitive neurotoxicity screening test in non-protected stages of vertebrates.

PMID: 29022183

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48. Toxicol In Vitro. 2018 Feb;46:86-93. doi: 10.1016/j.tiv.2017.09.030. Epub 2017 Oct 2.

Endocrine disruptor effect of perfluorooctane sulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) on porcine ovarian cell steroidogenesis.

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Abstract

Previous studies with perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) indicate that they act as endocrine disruptors, in addition to inducing alterations and damaging reproductive health; however, the biological mechanisms by which these disorders are produced are not yet understood. The aim of this study was to analyze the effect of PFOS and PFOA on in vitro steroidogenic secretion in porcine theca and granulosa cells, with or without gonadotropic stimulation. Granulosa and theca cells were isolated and cultured. Cell nature was performed by immunocytochemistry. PFOS and PFOA effect on steroid secretion was analyzed by chemiluminescence. In the present study, alterations in steroidogenic secretion were found when administering PFOS (0.12, 1.2, 12, 120 or 240μM) or PFOA (0.012, 0.12, 1.2, 12 or 24μM) to theca and granulosa cells. When theca and granulosa cells were stimulated with 500ng/mL LH or 500ng/mL

FHS, respectively and immediately followed with 1.2μM of PFOS or PFOA, the perfluorinated compounds inhibited the secretion of steroid hormones in both stimulated cell types. The results indicate that PFOS and PFOA act on steroidogenic ovarian cells as endocrine disruptors, which could affect the dependent functions of sexual steroids.

PMID: 28982594

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49. Sci Total Environ. 2018 Feb 1;613-614:352-360. doi: 10.1016/j.scitotenv.2017.09.021. Epub 2017 Sep 14.

Potential effects of changes in climate and emissions on distribution and fate of perfluorooctane sulfonate in the Bohai Rim, China.

Su C[1], Song S[1], Lu Y[2], Liu S[3], Giesy JP[4], Chen D[5], Jenkins A[6], Sweetman AJ[7], Yvette B[1].

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Centre for Ecology & Hydrology, Wallingford, OX 10 8BB, UK; Lancaster Environment Centre, Lancaster University, Lancaster LA1 4YQ, UK.

Abstract

Climate change and emissions rates of contaminants are expected to affect distribution and fate of Persistent Organic Pollutants (POPs) in the environment, however, studies on these combined factors are rare. In this study, Perfluorooctane Sulfonate (PFOS) is used as an example to assess how those two factors synthetically affect fate and disposition of POPs in the Bohai Rim of China by using the Berkeley-Trent-Urban-Rural (BETR-Urban-Rural) model. We set up three climate change scenarios and four emission scenarios to conduct the simulations. The results show that climate change could have significant effects on the transport and fate of PFOS mainly including advection, inter-compartmental transfer under the "worst case" emission scenario. For most grids, a remarkable decrease in concentrations of PFOS are predicted for fresh water and urban soil in the future, with precipitation and temperature being predominant factors, whilst for coastal water and rural soil, an increasing trend is predicted. Additionally, predicted sum of sources to the Bohai Sea increases greater than removals from the Bohai Sea in the future, adding evidence that concentrations of PFOS in coastal water will increase more in the future. Under scenarios of reduced emissions and climate change, concentrations of PFOS in each compartment decreased more rapidly over time. We suggest that assessment of future climate change impacts on fate of PFOS could take emission reductions into consideration.

PMID: 28917174

Similar articles

50. Sci Total Environ. 2018 Feb 1;613-614:176-185. doi: 10.1016/j.scitotenv.2017.09.065. Epub 2017 Sep 12.

Assessing the potential contributions of additional retention processes to PFAS retardation in the subsurface.

Brusseau ML[1].

Author information:

1 429 Shantz Bldg, Soil, Water and Environmental Science Department, Hydrology and Atmospheric Sciences Department, School of Earth and Environmental Sciences, University of Arizona, United States. Electronic address: brusseau@email.arizona.edu.

Abstract

A comprehensive understanding of the transport and fate of per- and poly-fluoroalkyl substances (PFAS) in the subsurface is critical for accurate risk assessments and design of effective remedial actions. A multi-process retention model is proposed to account for potential additional sources of retardation for PFAS transport in source zones. These include partitioning to the soil atmosphere, adsorption at air-water interfaces, partitioning to trapped organic liquids (NAPL), and adsorption at NAPL-water interfaces. An initial assessment of the relative magnitudes and significance of these retention processes was conducted for two PFAS of primary concern, perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA), and an example precursor (fluorotelomer alcohol, FTOH). The illustrative evaluation was conducted using measured porous-medium properties representative of a sandy vadose-zone soil. Data collected from the literature were used to determine measured or estimated values for the relevant distribution coefficients, which were in turn used to calculate retardation factors for the model system. The results showed that adsorption at the air-water interface was a primary source of retention for both PFOA and PFOS, contributing approximately 50% of total retention for the conditions employed. Adsorption to NAPL-water interfaces and partitioning to bulk NAPL were also shown to be significant sources of retention. NAPL partitioning was the predominant source of retention for FTOH, contributing ~98% of total retention. These results indicate that these additional processes may be, in some cases, significant sources of retention for subsurface transport of PFAS. The specific magnitudes and significance of the individual retention processes will depend upon the properties and conditions of the specific system of interest (e.g., PFAS constituent and concentration, porous medium, aqueous chemistry, fluid saturations, co-contaminants). In cases wherein these additional retention processes are significant, retardation of PFAS in source areas would likely be greater than what is typically estimated based on the standard assumption of solid-phase adsorption as the sole retention mechanism. This has significant ramifications for accurate determination of the migration potential and magnitude of mass flux to groundwater, as well as for calculations of contaminant mass residing in source zones. Both of which have critical implications for human-health risk assessments.

PMCID: PMC5693257 [Available on 2019-02-01]
PMID: 28915454
Similar articles

51. J Appl Toxicol. 2018 Feb;38(2):219-226. doi: 10.1002/jat.3515. Epub 2017 Aug 31.

Relationship between peroxisome proliferator-activated receptor alpha activity and cellular concentration of 14 perfluoroalkyl substances in HepG2 cells.

Rosenmai AK[1], Ahrens L[2], le Godec T[1], Lundqvist J[1], Oskarsson A[1].

Author information:

1 Department of Biomedical Sciences and Veterinary Public Health, Swedish University of Agricultural Sciences, Box 7028, SE-750 07, Uppsala, Sweden.

2 Department of Aquatic Sciences and Assessment, Swedish University of Agricultural Sciences, Box 7050, SE-750 07, Uppsala, Sweden.

Abstract

Peroxisome proliferator-activated receptor alpha (PPARα) is a molecular target for perfluoroalkyl substances (PFASs). Little is known about the cellular uptake of PFASs and how it affects the PPARα activity. We investigated the relationship between PPARα activity and cellular concentration in HepG2 cells of 14 PFASs, including perfluoroalkyl carboxylates (PFCAs), perfluoroalkyl sulfonates and perfluorooctane sulfonamide (FOSA). Cellular concentrations were determined by high-performance liquid chromatography-tandem mass spectrometry and PPARα activity was determined in transiently transfected cells by reporter gene assay. Cellular uptake of the PFASs was low (0.04-4.1%) with absolute cellular concentrations in the range 4-2500 ng mg^{-1} protein. Cellular concentration of PFCAs increased with perfluorocarbon chain length up to perfluorododecanoate. PPARα activity of PFCAs increased with chain length up to perfluorooctanoate. The maximum induction of PPARα activity was similar for short-chain (perfluorobutanoate and perfluoropentanoate) and long-chain PFCAs (perfluorododecanoate and perfluorotetradecanoate) (approximately twofold). However, PPARα activities were induced at lower cellular concentrations for the short-chain homologs compared to the long-chain homologs. Perfluorohexanoate, perfluoroheptanoate, perfluorooctanoate, perfluorononanoate (PFNA) and perfluorodecanoate induced PPARα activities >2.5-fold compared to controls. The concentration-response relationships were positive for all the tested compounds, except perfluorooctane sulfonate PFOS and FOSA, and were compound-specific, as demonstrated by differences in the estimated slopes. The relationships were steeper for PFCAs with chain lengths up to and including PFNA than for the other studied PFASs. To our knowledge, this is the first report establishing relationships between PPARα activity and cellular concentration of a broad range of PFASs.

PMID: 28857218

Similar articles

52. Appl Biochem Biotechnol. 2018 Feb;184(2):471-483. doi: 10.1007/s12010-017-2559-4. Epub 2017 Jul 25.

Thermal Pretreatment of Harvest Residues and Their Use in Anaerobic Co-digestion with Dairy Cow Manure.

Kovačić Đ[1], Kralik D[2], Jovičić D[2], Rupčić S[3], Popović B[2], Tišma M[4].

Author information:

1 Faculty of Agriculture in Osijek, J. J. Strossmayer University of Osijek, Vladimira Preloga 1, 31000, Osijek, HR, Croatia. djkovacic@pfos.hr.

2 Faculty of Agriculture in Osijek, J. J. Strossmayer University of Osijek, Vladimira Preloga 1, 31000, Osijek, HR, Croatia.

3 Faculty of Electrical Engineering, Computer Science and Information Technology Osijek, J. J. Strossmayer University of Osijek, Kneza Trpimira 2B, 31000, Osijek, HR, Croatia.

4 Faculty of Food Technology Osijek, J. J. Strossmayer University of Osijek, F. Kuhača 20, 31000, Osijek, HR, Croatia.

Abstract

Several batch experiments were conducted on the anaerobic co-digestion of dairy cow manure (DCM) with three harvest residues (HR) (soybean straw, sunflower stalks, and corn stover). The influence of thermal pretreatment of HR on biogas production was investigated, where the HR were thermally pretreated at two different temperatures: T = 121 °C and T = 175 °C, during t = 30 and t = 90 min, respectively. All anaerobic co-digestion batch experiments were performed simultaneously under thermophilic regime, at T = 55 °C. Biogas and methane yields were significantly improved in experiments performed with corn stover thermally pretreated at 175 °C for 30 min (491.37 cm^3/g VS and 306.96 cm^3/g VS, respectively), if compared to experiments performed with untreated corn stover. The highest VS and COD removal rates were also observed in the same group of experiments and were 34.5 and 50.1%, respectively. The highest biogas and methane yields with soybean straw (418.93 cm^3/g VS and 261.44 cm^3/g VS, respectively) were obtained when soybean straw pretreated at 121 °C during 90 min. The highest biogas and methane yields with sunflower stalk (393.28 cm^3/g VS and 245.02 cm^3/g VS, respectively) were obtained when sunflower stalk was pretreated at 121 °C during 90 min.

PMID: 28744715 [Indexed for MEDLINE]

Similar articles

Message

From: Donohue, Joyce [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BB5340EC745149EDBF80D2B8B2F9B919-JDONOHUE]
Sent: 4/3/2018 12:39:22 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: RE: OST and RAD GenX Assessment Check In

Thank you

From: Jacobs, Brittany
Sent: Tuesday, April 03, 2018 8:38 AM
To: Donohue, Joyce <Donohue.Joyce@epa.gov>
Subject: FW: OST and RAD GenX Assessment Check In

Hi Joyce,

I have attached the studies you mentioned to Jamie if you wanted to double check them for toxicokinetic information.

Thanks!
Britt

From: Donohue, Joyce
Sent: Monday, April 02, 2018 3:05 PM
To: Strong, Jamie <Strong.Jamie@epa.gov>
Subject: RE: OST and RAD GenX Assessment Check In

Jamie:

There are papers that relate to the toxicokinetics exercise that you gave me to work on that we do not have in summary form but are mentioned in Tracy's summary of the Dupont submissions. They relate to inhalation and dermal exposure. I think I remember seeing something on the inhalation study in summary I reviewed with Chris B up at OPPT some months ago. There are two dermal study listings in Tracy's summary called Draft Internal deliberative review – non CBI. I do not know whether this needs a meeting. I just wanted to make you aware of it.

We usually do cover the acute toxicity in a HA. I do not know if there is any toxicokinetic information in these studies.

Joyce

Acute toxicity

- DuPont-17751-723: E.I. du Pont de Nemours and Company (2009). H-28548: Inhalation Acute Exposure with Anatomic Pathology Evaluation in Rats. Test Guideline Not Identified. Study conducted by E.I. du Pont de Nemours and Company (Study Completion Date: May 11, 2009), Newark, Delaware.

- DuPont-24113: E.I. du Pont de Nemours and Company (2007). FRD-902: Acute Dermal Toxicity Study in Rats. US EPA OPPTS 870.1200; OECD Guideline 402. Study conducted by E.I. du Pont de Nemours and Company (Study Completion Date: November 28, 2007), Newark, Delaware.

- DuPont-24030: E.I. du Pont de Nemours and Company (2007). FRD-902: Acute Dermal Irritation Study in Rabbits. US EPA OPPTS 870.2500; OECD Guideline 404. Study conducted by E.I. du Pont de Nemours and Company (Study Completion Date: November 21, 2007), Newark, Delaware.

- DuPont-24114: E.I. du Pont de Nemours and Company (2007). FRD-902: Acute Eye Irritation Study in Rabbits. US EPA OPPTS 870.2400; OECD Guideline 405. Study conducted by E.I. du Pont de Nemours and Company (Study Completion Date: December 14, 2007), Newark, Delaware. -

OST usually combines the dermal and occular

From: Strong, Jamie
Sent: Monday, April 02, 2018 2:31 PM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>; Behrsing, Tracy <behrsing.tracy@epa.gov>; Henry, Tala <Henry.Tala@epa.gov>; Aubee, Catherine <Aubee.Catherine@epa.gov>; Benson, Amy <Benson.Amy@epa.gov>; Brinkerhoff, Chris <Brinkerhoff.Chris@epa.gov>; Babcock, Amy <babcock.amy@epa.gov>; Behl, Betsy <Behl.Betsy@epa.gov>; Miller, Gregory <Miller.Gregory@epa.gov>; Donohue, Joyce <Donohue.Joyce@epa.gov>
Subject: RE: OST and RAD GenX Assessment Check In

Hi all, I wanted to check in and see if anyone had any agenda items to discuss tomorrow. We are busy developing the document and really don't have anything to report out. We think we can better use the time tomorrow for continued document development. If you would like to meet, let me know otherwise I will have Brittany cancel.

-----Original Appointment-----
From: Jacobs, Brittany
Sent: Monday, February 12, 2018 4:33 PM
To: Jacobs, Brittany; Behrsing, Tracy; Henry, Tala; Aubee, Catherine; Benson, Amy; Brinkerhoff, Chris; Babcock, Amy; Behl, Betsy; Strong, Jamie; Miller, Gregory; Donohue, Joyce
Subject: OST and RAD GenX Assessment Check In
When: Tuesday, April 03, 2018 12:00 PM-12:30 PM (UTC-05:00) Eastern Time (US & Canada).
Where: DCRoomWest5231L/DC-CCW-OST

Updated 2/15 with call in number

Conference phone number:
Conference ID:

Ex. 6 Personal Privacy (PP)

For OST and RAD to touch base about the GenX assessment. Scheduled through July. Hopefully we will just need the half hour, but I can extend out if needed.

This was the most available time according to the Doodle Poll sent out.

Message

From: Donohue, Joyce [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BB5340EC745149EDBF80D2B8B2F9B919-JDONOHUE]
Sent: 4/3/2018 7:40:12 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: RE: Summary of peroxisome proliferation activity for GenX chemicals
Attachments: Gen-X Studies - summary.docx

Ex. 5 Deliberative Process (DP)

From: Jacobs, Brittany
Sent: Tuesday, April 03, 2018 3:32 PM
To: Strong, Jamie <Strong.Jamie@epa.gov>
Cc: Miller, Gregory <Miller.Gregory@epa.gov>; Donohue, Joyce <Donohue.Joyce@epa.gov>
Subject: RE: Summary of peroxisome proliferation activity for GenX chemicals

Ex. 5 Deliberative Process (DP)

From: Strong, Jamie
Sent: Tuesday, April 03, 2018 3:22 PM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>
Cc: Miller, Gregory <Miller.Gregory@epa.gov>; Donohue, Joyce <Donohue.Joyce@epa.gov>
Subject: RE: Summary of peroxisome proliferation activity for GenX chemicals

Thanks, this is awesome. I added to document and edited.

From: Jacobs, Brittany
Sent: Tuesday, April 03, 2018 2:33 PM
To: Strong, Jamie <Strong.Jamie@epa.gov>
Cc: Miller, Gregory <Miller.Gregory@epa.gov>; Donohue, Joyce <Donohue.Joyce@epa.gov>
Subject: Summary of peroxisome proliferation activity for GenX chemicals

Here is a summary of the studies measuring peroxisome proliferation:

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

Britt

Message

From: Donohue, Joyce [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BB5340EC745149EDBF80D2B8B2F9B919-JDONOHUE]
Sent: 4/12/2018 9:07:33 PM
To: Strong, Jamie [Strong.Jamie@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]
Subject: Toxicokinetics thus far.
Attachments: Toxicokinetics HFPO- JMD5.docx

I have one more study to do that Brittany just sent me. This should give you all something to look at to let me know if this is what you wanted.

Message

From: Donohue, Joyce [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BB5340EC745149EDBF80D2B8B2F9B919-JDONOHUE]
Sent: 4/13/2018 4:02:32 PM
To: Strong, Jamie [Strong.Jamie@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]
Subject: Updated version for the toxicokinetic section.
Attachments: Toxicokinetics HFPO- JMD6.docx

Dear Jamie:

Here is the update with the added developmental study, an intro and some editing. Having the figures at least lets you see them. Rushing is a published study.

Joyce

Message

From: Donohue, Joyce [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BB5340EC745149EDBF80D2B8B2F9B919-JDONOHUE]
Sent: 5/30/2018 12:58:31 PM
To: Strong, Jamie [Strong.Jamie@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]
Subject: RE: genx

I do not recall that any of the studies examined neurotoxicity endpoints or made actual measurements in any of the tissues.

From: Strong, Jamie
Sent: Wednesday, May 30, 2018 8:47 AM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>; Miller, Gregory <Miller.Gregory@epa.gov>; Donohue, Joyce <Donohue.Joyce@epa.gov>
Subject: genx

Do we have any info that genx cross blood brain barrier?

Jamie B. Strong | Chief, Human Health Risk Assessment Branch
Health and Ecological Criteria Division | Office of Science and Technology | Office of Water
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW, 4301-T, Washington, DC 20460
☎ Phone: (202) 566-0056 | strong.jamie@epa.gov

Message

From: Donohue, Joyce [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BB5340EC745149EDBF80D2B8B2F9B919-JDONOHUE]
Sent: 6/5/2018 1:33:07 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: RE: Analytical method Gen-X

Mark's information will certainly give you support in crafting an answer to the comment. Thank you for sharing the information.

From: Jacobs, Brittany
Sent: Tuesday, June 05, 2018 9:30 AM
To: Donohue, Joyce <Donohue.Joyce@epa.gov>
Subject: RE: Analytical method Gen-X

Thanks Joyce!

I reached out to Mark yesterday about the isomer question we had and he said:
"In all of my sample runs I have yet to find two peaks for any HFPO dimer acid indicating there are isomers. Whether that be a standard or any real sample. It is still possible and my chromatography does not tease them apart. However, I have yet to see more than one peak."

Figured you would like to know

Britt

From: Donohue, Joyce
Sent: Tuesday, June 05, 2018 9:28 AM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: Analytical method Gen-X

Dear Brittany:

Looks like an important paper. Share as appropriate.

Joyce

Message

From: Donohue, Joyce [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BB5340EC745149EDBF80D2B8B2F9B919-JDONOHUE]
Sent: 6/22/2018 3:17:19 PM
To: Strong, Jamie [Strong.Jamie@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]
Subject: My comments on the draft Gen-X
Attachments: DRAFT EXT PEER REVIEW Human Health Tox Values for GenX Chemicals_06-21-18_final JMD.docx

Dear Jamie:

I think I only have two things of significance in my comments. The first is the error with the Table citation that I mention. The other relates to not fully acknowledging the impact that the dose spacing in the chronic study no doses between 1 mg/kg/day and 50 mg/kg/day had in creating a data gap for some of the chronic effects.

Joyce

Message

From: Donohue, Joyce [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BB5340EC745149EDBF80D2B8B2F9B919-JDONOHUE]
Sent: 8/8/2018 1:30:46 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]
Subject: One Gen X family paper from yesterday's lit search.
Attachments: Sheng et al 2018 HFPO-TA hepatotox mice.pdf

It would be interesting to compare the genes with the paper I reviewed on those linked to PPAR alpha activation. This is the trimer acid rather than the dimer acid.

Message

From: Donohue, Joyce [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BB5340EC745149EDBF80D2B8B2F9B919-JDONOHUE]
Sent: 8/13/2018 5:19:23 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: RE: OST and RAD GenX Assessment Check In

I have no problem with cancellation.

From: Jacobs, Brittany
Sent: Monday, August 13, 2018 11:34 AM
To: Behl, Betsy <Behl.Betsy@epa.gov>; Henry, Tala <Henry.Tala@epa.gov>; Aubee, Catherine <Aubee.Catherine@epa.gov>; Benson, Amy <Benson.Amy@epa.gov>; Brinkerhoff, Chris <Brinkerhoff.Chris@epa.gov>; Babcock, Amy <babcock.amy@epa.gov>; Strong, Jamie <Strong.Jamie@epa.gov>; Miller, Gregory <Miller.Gregory@epa.gov>; Donohue, Joyce <Donohue.Joyce@epa.gov>
Subject: OST and RAD GenX Assessment Check In

Hello,

I wanted to check in and see if everyone is okay with cancelling this meeting for tomorrow? Jamie and Betsy are out this week.

We are still working on finalizing our response to comments document, Betsy has it now. We will be meeting with the agency reviewers on Monday (8/20) to go over the peer review reports.

Best,
Brittany

Message

From: Donohue, Joyce [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BB5340EC745149EDBF80D2B8B2F9B919-JDONOHUE]
Sent: 11/13/2018 7:48:10 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: RE: PFBA and Gen-X communication materials

Dear Brittany:

Thanks for the response. If we end up getting citizen calls via the hot line, I suggest we just refer them to OGWDW.

Joyce

From: Jacobs, Brittany
Sent: Tuesday, November 13, 2018 2:44 PM
To: Donohue, Joyce <Donohue.Joyce@epa.gov>
Subject: RE: PFBA and Gen-X communication materials

Hi Joyce,

There was also a technical factsheet which spelled out all of the acronyms. This wasn't attached to the materials sent out and I'm not sure why it wasn't included. I'm not sure why the acronyms aren't defined in the general public factsheet, but maybe they wanted to keep the general public fact sheet more plain language. For example, I'm not sure that defining HFPO would help the ordinary citizen, since they know these chemicals as GenX. I've been battling with OGWDW/comms to have them stop referencing these chemicals as simply GenX, so I'm surprised HFPO dimer acid even made it into the factsheet.

Thanks,
Brittany

From: Donohue, Joyce
Sent: Tuesday, November 13, 2018 12:41 PM
To: Jacobs, Brittany <Jacobs.Brittany@epa.gov>
Subject: PFBA and Gen-X communication materials

Dear Brittany:

I do not know if you were involved with the development of the communication materials. The thing that struck me when reading them is the number of acronyms that are not identified the first time they are used such a HPFO. Do you know if the materials when released are going to include a list of acronyms? We are used to most of them but if States plan to share them with their public, the citizen may not know the name that goes with some of the acronyms.

Joyce

Message

From: Donohue, Joyce [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BB5340EC745149EDBF80D2B8B2F9B919-JDONOHUE]
Sent: 10/18/2018 6:09:05 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: Paper from Maura
Attachments: Boa2018.acs.est.pdf

From: Donohue, Maura
Sent: Thursday, October 18, 2018 1:21 PM
To: Donohue, Joyce <Donohue.Joyce@epa.gov>
Subject: RE: Can you get us a copy of this paper?

Here you go

From: Donohue, Joyce
Sent: Thursday, October 18, 2018 12:34 PM
To: Donohue, Maura <Donohue.Maura@epa.gov>
Subject: Can you get us a copy of this paper?

Environ Sci Technol. 2018 Sep 27. doi: 10.1021/acs.est.8b02172. [Epub ahead of print]

Degradation of PFOA Substitute: GenX (HFPO-DA Ammonium Salt): Oxidation with UV/Persulfate or Reduction with UV/Sulfite?

Bao Y[1], Deng S[1], Jiang X[1], Qu Y[1], He Y[1], Liu L[1], Chai Q[1], Mumtaz M[1], Huang J[1], Cagnetta G[1], Yu G[1].

Author information:
1. State Key Joint Laboratory of Environment Simulation and Pollution Control (SKJLESPC), Beijing Key Laboratory for Emerging Organic Contaminants Control (BKLEOC), School of Environment, POPs Research Center , Tsinghua University , Beijing 100084 , China.

Abstract

Hexafluoropropylene oxide dimer acid (HFPO-DA, ammonium salt with trade name: GenX) has been recently detected in river water worldwide. There are significant concerns about its persistence, and potential adverse effects to the biota. In this study, the degradability of GenX by typical advanced redox technologies (UV/persulfate and UV/sulfate) is investigated. Results demonstrate that <5% GenX is oxidized after 3 h in UV/persulfate system, which is much lower than ~27% for PFOA. In comparison, GenX can be readily degraded and defluorinated by hydrated electron (e_{aq}^-) generated by UV/sulfite system. Specifically, GenX is not detectable after 2 h, and >90% of fluoride ion is recovered 6 h later. This is attributed to the accumulation and subsequent degradation of CF_3CF_2COOH and CF_3COOH, which are stable intermediates of GenX degradation. Mechanistic investigations suggest that the etheric bond in the molecule is a favorable attack point for the e_{aq}^-. Such finding is corroborated by quantum chemical calculations. The side CF_3- at the α-carbon

probably acts as an effective barrier that prevents GenX from being cleaved by SO_4^{-}• or OH• at its most sensible point (i.e. the carboxyl group). This study illustrates that reduction by UV/sulfite might be a promising technology to remove GenX from contaminated water.

PMID: 30207460

Similar articles

Message

From: Donohue, Joyce [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BB5340EC745149EDBF80D2B8B2F9B919-JDONOHUE]
Sent: 5/1/2019 7:25:02 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: FW: perfluorooctanoate OR "perfluorooctanoic acid" OR - PubMed

From: McCune, Jennifer
Sent: Wednesday, May 01, 2019 3:11 PM
To: Donohue, Joyce <Donohue.Joyce@epa.gov>
Subject: FW: perfluorooctanoate OR "perfluorooctanoic acid" OR - PubMed

Hello,

I ran the search for 4/1/19 -- 4/15/19. There were 37 results.

Jenn

Jennifer McCune
Public Access/Cataloging Librarian
Arctic Slope Mission Services (Contractor)
3334C WJC West
US EPA Headquarters, Washington, D.C.
Desk: 202-566-1432
McCune.Jennifer@epa.gov

Tell us how we're doing - rate our customer service!
http://www.surveymonkey.com/s/epalibsurvey

From: Sent by NCBI <nobody@ncbi.nlm.nih.gov>
Sent: Wednesday, May 01, 2019 3:05 PM
To: McCune, Jennifer <McCune.Jennifer@epa.gov>
Subject: perfluorooctanoate OR "perfluorooctanoic acid" OR - PubMed

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Sent on: Wed May 1 15:01:19 2019

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acid" OR perfluorononanoate OR pfhxa OR "perfluorohexanoic acid" OR "fluorinated surfactants" OR "Adona" OR "EEA" OR "Gen-X" OR "F53B" OR "F-53B" OR Solvay Filters: From 2019/03/16 to 2019/03/31

PubMed Results

Items 1 - 37 of 37 (Display the 37 citations in PubMed)

1. Gait Posture. 2019 Mar 28;71:92-97. doi: 10.1016/j.gaitpost.2019.03.029. [Epub ahead of print]

Neuromotor control during stair ambulation in individuals with patellofemoral osteoarthritis compared to asymptomatic controls.

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Abstract

BACKGROUND:

Patellofemoral OA is characterized by PF pain during activities that load a flexed knee. Stair stepping ability is frequently impaired, yet little is known of the muscular recruitment strategies utilized during this task. Altered recruitment strategies may provide targets for clinical interventions. We aimed to determine if people with PFOA ascend and descend stairs with different muscular recruitment strategies compared to similar aged healthy individuals.

METHODS:

Twenty-two people with PFOA and 20 controls were recruited. Electromyographic recordings from gluteus maximus and medius, medial and lateral hamstrings, vastus medialis and lateralis, medial and lateral

gastrocnemius and soleus were acquired during stair ascent and descent. Force plate data was acquired to determine timing of foot placements and characterize dynamic stability.

RESULTS:

Seventeen people with PFOA (59 ± 10 years, 73 ± 13 kg, 167 ± 9 cm) and 15 controls (57 ± 10 years, 73 ± 16 kg, 171 ± 11 cm) had complete data. People with PFOA demonstrated: longer vastii activation duration during descent (lateralis: $p = 0.01$; medialis: $p = 0.02$); earlier onset of vastus lateralis for ascent ($p < 0.01$) and descent ($p = 0.04$); earlier onset of soleus in descent ($p = 0.04$); and shorter duration of GMax during ascent ($p = 0.05$). Peak Fz timing (time between the start of the anticipatory postural adjustment and the end of the stepping task) was ~70ms later during stair descent in PFOA compared to controls ($p = 0.01$).

SIGNIFICANCE:

People with PFOA utilize muscular activation strategies consistent with minimizing knee pain during stair ambulation. Clinical interventions aimed at gluteal and quadriceps activation may be warranted in PFOA.

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PMID: 31026805

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2. Sci Total Environ. 2019 Mar 30;672:162-173. doi: 10.1016/j.scitotenv.2019.03.369. [Epub ahead of print]

Effects of soil organic carbon (SOC) content and accessibility in subsoils on the sorption processes of the model pollutants nonylphenol (4-n-NP) and perfluorooctanoic acid (PFOA).

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Abstract

Subsoils control the release of hydrophobic pollutants to groundwater systems, but the role of subsoil soil organic carbon (SOC) in sorption processes of hydrophobic organic pollutants remains unclear. Thus, this study aimed to understand the role of subsoil SOC in sorption processes of 4-n-nonylphenol (NP) and perfluorooctanoic acid (PFOA) as model pollutants. To characterize the sorption behavior of NP and PFOA, 42 sub- and 54 topsoil samples were used for batch experiments. Differences in NP and PFOA sorption between sub- and topsoil samples and its mechanisms were identified using multiple regression analysis. Generally, the sorption of NP and PFOA was linear in all samples. The sorption of NP to soil samples ($\log_{KD}$ = 1.78-3.68) was significantly higher and less variable than that of PFOA ($\log_{KD}$ = -0.97-1.44). In topsoils, SOC content had the highest influence on NP and PFOA sorption. For NP, hydrophobic interactions between NP and SOC were identified as the most important sorption mechanism. For PFOA, hydrophobic as well as electrostatic interactions were determined depending on soil pH. In subsoils, the relevance of SOC content for pollutant sorption decreased drastically. For NP, not SOC content but rather SOC quality was relevant in SOC poor subsoils. For PFOA, clay and iron oxide content were found to be relevant for pollutant interactions with the solid phase. Thus, especially in SOC depleted subsoils, the sorption potential for PFOA remained unpredictable.

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3. Sci Total Environ. 2019 Jun 25;671:714-721. doi: 10.1016/j.scitotenv.2019.03.240. Epub 2019 Mar 16.

Field-scale evaluation of the uptake of Perfluoroalkyl substances from soil by rice in paddy fields in South Korea.

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Abstract

The concentrations of 17 perfluoroalkyl substances (PFASs) were investigated in paddy soil, void water, and brown rice collected from 30 paddy fields to examine the uptake of PFASs from soil by rice. The total concentrations of PFASs ranged from 7.76 to 3020 ng/L (average = 166 ng/L) in void water, 0.120 to 13.9 ng/g dry-weight (dw) (1.92 ng/g dw) in paddy soils, and from not-detected to 1.85 ng/g (0.403 ng/g) in brown rice samples. The highest PFAS concentrations were observed in brown rice cultivated in a paddy field where high levels of PFASs were observed in void water and paddy soil. Among target PFAS compounds, perfluorocarboxylic acids were dominant and detected in all matrices, and perfluorooctanoic acid (PFOA) was the most predominant compound in brown rice and void water. Significant positive correlations were examined for some detected PFASs between each matrix. PFOA in brown rice was positively correlated with PFOA in void water as well as perfluorodecanoic acid (PFDA) in paddy soil ($p < 0.01$). PFOA in void water also had correlated with PFDA in paddy soil. However, there was no correlation of other compounds between each matrix, except for correlations of perfluorononanoic acid (PFNA) and PFDA in paddy soil with those in void water, respectively ($p < 0.05$). Moreover, PFOA concentration in brown rice (0.093 ng/g) was much higher than one in white rice detected with a non-detectable level.

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4. Toxics. 2019 Mar 25;7(1). pii: E18. doi: 10.3390/toxics7010018.

Propensity of *Tagetes erecta* L., a Medicinal Plant Commonly Used in Diabetes Management, to Accumulate Perfluoroalkyl Substances.

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Abstract

It has been extensively demonstrated that plants accumulate organic substances emanating from various sources, including soil and water. This fact suggests the potentiality of contamination of certain vital bioresources, such as medicinal plants, by persistent contaminants, such as perfluorooctanoic acid (PFOA), perfluorooctane sulfonate (PFOS), and perfluorobutane sulfonate (PFBS). Hence, in this study, the propensity of *Tagetes erecta* L. (a commonly used medicinal plant) to accumulate PFOA, PFOS, and PFBS was determined using liquid chromatography/tandem mass spectrometry (LC⁻MS/MS-8030). From the results, PFOA, PFOS, and PFBS were detected in all the plant samples and concentration levels were found to be 94.83 ng/g, 5.03 ng/g, and 1.44 ng/g, respectively, with bioconcentration factor (BCF) ranges of 1.30 to 2.57, 13.67 to 72.33, and 0.16 to 0.31, respectively. Little evidence exists on the bioaccumulative susceptibility of medicinal plants to these persistent organic pollutants (POPs). These results suggest that these medicinal plants (in particular, *Tagetes erecta* L., used for the management of diabetes) are also potential conduits of PFOA, PFOS, and PFBS into humans.

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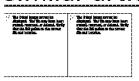

5. Environ Pollut. 2019 Mar 20;249:703-715. doi: 10.1016/j.envpol.2019.03.066. [Epub ahead of print]

Assessment of pops contaminated sites and the need for stringent soil standards for food safety for the protection of human health.

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Abstract

Persistent organic pollutants (POPs) including PCDD/Fs, PCBs and organochlorine pesticides (OCPs) are among the most important and hazardous pollutants of soil. Food producing animals such as chicken, beef, sheep and goats can take up soil while grazing or living outdoors (free-range) and this can result in contamination. In recent decades, large quantities of brominated flame retardants such as polybrominated diphenyl ethers (PBDEs), short-chain chlorinated paraffins (SCCPs) and per- and polyfluorinated alkylated substances (PFAS) have been produced and released into the environment and this has resulted in widespread contamination of soils and other environmental matrices. These POPs also bioaccumulate and can contaminate food of animal origin resulting in indirect exposure of humans. Recent assessments of chicken and beef have shown that surprisingly low concentrations of PCBs and PCDD/Fs in soil can result in exceedances of regulatory limits in food. Soil contamination limits have been established in a number of countries for PCDD/Fs but it has been shown that the contamination levels which result in regulatory limits in food (the maximum levels in the European Union) being exceeded, are below all the existing soil regulatory limits. 'Safe' soil levels are exceeded in many areas around emission sources of PCDD/Fs and PCBs. On the other hand, PCDD/F and dioxin-like PCB levels in soil in rural areas, without a contamination source, are normally safe for food producing animals housed outdoors resulting in healthy food (e.g. meat, eggs, milk). For the majority of POPs (e.g. PBDEs, PFOS, PFOA, SCCP) no regulatory limits in soils exist. There is, therefore, an urgent need to develop appropriate and protective soil standards minimising human exposure from food producing animals housed outdoors. Furthermore, there is an urgent need to eliminate POPs pollution sources for soils and to control, secure and remediate contaminated sites and reservoirs, in order to reduce exposure and guarantee food safety.

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PMID: 30933768

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6. Toxicol In Vitro. 2019 Mar 28;58:230-238. doi: 10.1016/j.tiv.2019.03.022. [Epub ahead of print]

Characterization of non-radiolabeled Thyroxine (T_4) uptake in cryopreserved rat hepatocyte suspensions: Pharmacokinetic implications for PFOA and PFOS chemical exposure.

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Abstract

The alteration of thyroxine (T_4) cellular uptake by an environmental chemical can serve as a contributing factor in thyroid hormone (TH) disruption. Herein, we describe a non-radiolabeled (LC-MS/MS) oil-filtration technique designed to characterize the mechanism(s) responsible for T_4 cellular uptake in cryopreserved rat hepatocyte suspensions. The environmental chemicals perfluorooctanoate (PFOA) and perfluorooctane sulfonate (PFOS) were evaluated for their effect on T_4 hepatic uptake. At 37 °C, hepatic assays demonstrated saturable kinetics with increasing T_4 concentrations, while a linear uptake rate consistent with passive diffusion was detected at 4 °C. Carrier-mediated (37-4 °C) transport of T_4 was the predominant hepatic uptake process versus passive diffusion. Cyclosporin A (CsA) chemically inhibited T_4 hepatic uptake, whereas PFOA/PFOS displayed no inhibition of T_4 translocation. Increasing PFOA/PFOS concentration levels with the T_4 serum carrier-protein transthyretin (TTR) present resulted in a dose-response increase in T_4 hepatic uptake rates, correlating with increased T_4 free fraction values. Hepatic assays conducted in the presence of PFOA/PFOS and TTR displayed an enhanced first-order T_4 hepatic uptake rate consistent with carrier-mediated transport. These in vitro findings characterizing increased T_4 hepatic uptake provides mechanistic insight regarding decreased T_4 serum levels (hypothyroxinemia)

previously observed within in vivo rodent studies following perfluorinated chemical exposure.

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PMID: 30930230
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7. Environ Sci Pollut Res Int. 2019 Mar 30. doi: 10.1007/s11356-019-04843-6. [Epub ahead of print]

An improved design of a passive sampler for polar organic compounds based on diffusion in agarose hydrogel.

Uríc J[1], Vrana B[2].

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Abstract

Passive samplers based on diffusive gradients in thin hydrogel films (DGT) were recently modified for sampling of polar organic compounds in water. However, since the sampling rates of the commonly used DGT design with the surface area of 3.1 cm^2 are low, we propose to increase them by applying a two-sided design with a larger sampling surface area of 22.7 cm^2. The sampler design consists of two sorptive hydrogel disks compressed between two diffusive hydrogel disk layers strengthened by nylon netting and held together by two stainless steel rings. Sorbent/water distribution coefficients (K_{SW}) were determined, and the sampler was calibrated for monitoring 11 perfluoroalkyl substances and 12 pharmaceuticals and personal care products in water at laboratory conditions using a closed system with artificial flow generated by submersible pumps. A field performance test was conducted at five locations in the Morava River basin in Czech Republic. The median value of laboratory-derived sampling rates was 43 mL day^{-1} with extreme values of 2 mL day^{-1} and 90 mL day^{-1} for perfluorotridecanoic and perfluoroheptanoic acids, respectively. The log K_{SW} values of tested compounds ranged from 3.18 to 5.47 L kg^{-1}, and the estimated halftime to attain sampler-water equilibrium ranged from 2 days to more than 28 days, which is the maximum recommended exposure period, considering potential issues with the stability of hydrogel. The sampler can be used for assessment of spatial trends as well as estimation of aqueous concentration of investigated polar compounds.
PMID: 30929173

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8. World Neurosurg. 2019 Mar 27. pii: S1878-8750(19)30874-5. doi: 10.1016/j.wneu.2019.03.194. [Epub ahead of print]

Trigeminal Schwannomas in Middle Fossa Could Breach into Subdural Space: Report of 4 Cases and Review of Literature.

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Abstract

OBJECTIVE:

The objectives of this study were to report 4 special cases diagnosed with trigeminal schwannomas (TS), among whom tumor in epidural space of middle fossa broke through dura mater into subdural space, and to analyze the potential reason for recurrence of TS in middle fossa after surgical removal by endoscopic endonasal approach (EEA) or interdural approach.

METHODS:

The information of 4 patients diagnosed with TS who were surgically treated was retrospectively analyzed, the selection of approaches, surgical strategies, and potential reason for recurrence after middle fossa TS removal by EEA and interdural approach were discussed.

RESULTS:

During last 10 years, 43 patients with TS received surgical treatment at Xuan Wu Hospital of Capital Medical University, among whom 1 patient with TS extending from middle fossa to infratemporal fossa was firstly treated by EEA, then the tumor recurred and received second operation via frontotemporal subdural approach. During the second operation, we found part of tumor had broken through the dura mater into subdural space. Moreover, this phenomenon was detected in another 3 patients with middle-posterior fossa TS.

CONCLUSIONS:

TS in middle fossa has been widely believed to be totally located at epidural space, whereas we found that it could occasionally breach into subdural space and accept blood supply from pial artery. We believe this could be the potential reason for recurrence after tumor resection by EEA and interdural approach.

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PMID: 30928581
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9. Environ Pollut. 2019 Mar 21;249:550-559. doi: 10.1016/j.envpol.2019.03.032. [Epub ahead of print]

Chronic exposure to 6:2 chlorinated polyfluorinated ether sulfonate acid (F-53B) induced hepatotoxic effects in adult zebrafish and disrupted the PPAR signaling pathway in their offspring.

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Abstract

As a Chinese-specific alternative to perfluorooctane sulfonate (PFOS), 6:2 chlorinated polyfluorinated ether sulfonate (commercial name: F-53B) has been used in the metal plating industry for over 40 years. This prevalence of use has resulted in its subsequent detection within the environment, wildlife, and humans. Despite this, however, its hepatotoxic effects on aquatic organisms remain unclear. Here, we characterized the impacts of long-term F-53B exposure on adult zebrafish liver and their offspring. Results showed that the concentration of F-53B was greater in the F0 liver than that in the gonads

and blood. Furthermore, males had significantly higher liver F-53B levels than females. Hepatomegaly and obvious cytoplasmic vacuolation indicated that F-53B exposure induced liver injury. Compared to control, liver triglyceride levels decreased by 30% and 33.5% in the 5 and 50 μg/L-exposed males and 22% in 50 μg/L-exposed females. Liver transcriptome analysis of F0 adult fish found 2175 and 1267 differentially expressed genes (DEGs) in the 5 μg/L-exposed males and females, respectively. Enrichment analyses further demonstrated that the effects of F-53B on hepatic transcripts were sex-dependent. Gene Ontology showed that most DEGs were involved in multicellular organism development in male fish, whereas in female fish, most DEGs were related to metabolic processes and gene expression. qRT-PCR analysis indicated that the PPAR signaling pathway likely contributed to F-53B-induced disruption of lipid metabolism in F0 adult fish. In F1 larvae (5 days post fertilization), the transcription of pparα increased, like that in F0 adult fish, but most target genes showed the opposite expression trends as their parents. Taken together, our research demonstrated chronic F-53B exposure adversely impacts zebrafish liver, with disruption of PPAR signaling pathway dependent on sex and developmental stage.

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10. Regul Toxicol Pharmacol. 2019 Mar 27. pii: S0273-2300(19)30087-X. doi: 10.1016/j.yrtph.2019.03.015. [Epub ahead of print]

Response to "Overgeneralization by Anderson et al. and Luz et al. regarding safety of fluorotelomer-base chemistry".

Anderson JK[1], Luz AL[2], Goodrum P[3].

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3. Integral Consulting Inc, 7030 E Genesee Street, Suite 105, Fayetteville, NY, 13066, USA.
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11. J Expo Sci Environ Epidemiol. 2019 Mar 29. doi: 10.1038/s41370-019-0134-5. [Epub ahead of print]

Correction: Guideline levels for PFOA and PFOS in drinking water: the role of scientific uncertainty, risk assessment decisions, and social factors.

Cordner A[1], De La Rosa VY[2,3], Schaider LA[2], Rudel RA[2], Richter L[3], Brown P[3,4].

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Erratum for

- Guideline levels for PFOA and PFOS in drinking water: the role of scientific uncertainty, risk assessment decisions, and social factors. [J Expo Sci Environ Epidemiol. 2019]

Abstract

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12. J Hazard Mater. 2019 Mar 19;373:224-231. doi: 10.1016/j.jhazmat.2019.03.074. [Epub ahead of print]

Length-specific occurrence and profile of perfluoroalkyl acids (PFAAs) in animal protein feeds.

Li X[1], Gao K[2], Dong S[1], Liu X[2], Fu K[3], Wang P[1], Zhang A[2], Su X[4], Fu J[5].

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Abstract

Animal protein supplement feeds (APFs) are susceptible to perfluoroalkyl acids (PFAAs) and could be the main sources for raised animals, thereafter causing further human exposure through the farm-to-fork pathway. However, the occurrence of PFAAs has been rarely evaluated in various APFs, especially for emerging short-chain PFAAs. In the present study, we collected the most prevalent APFs (blood meal, meat meal, feather meal, soybean meal and DDGS) and found that Σ_{16}PFAAs ranged from undetectable to 37.1 ng/g dry weight (dw) (average: 7.23 ng/g dw). Blood meal contained the highest PFAA levels, and results revealed that some terrestrial-derived APFs might be present at levels on par with the marine-derived feed. Animal-derived APFs (mean 10.9 ng/g dw) possessed higher ∑PFAAs than plant-derived APFs (0.75 ng/g dw). Length-specific PFAA profiles were specified between terrestrial-origin and marine-origin feeds in addition to animal-derived and plant-derived feeds. Short-chain PFAAs (PFBA, PFBS and PFHxS) were primarily found in blood meal, meat meal, soybean meal and DDGS, while the long-chain counterparts dominated in feather meal. It is of great concern that feed exposure to emerging contaminants has not drawn enough attention.

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PMID: 30921573
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13. Int J Ophthalmol. 2019 Mar 18;12(3):381-386. doi: 10.18240/ijo.2019.03.05. eCollection 2019.

Effects of perfluorooctane on the retina as a short-term and small amounts remnant in rabbits.

Li QC[1,2], Yu J[1,2], Jiang CH[1,2,3], Zhu HH[3], Liu K[4], Zhao JC[5].

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Abstract

AIM:

To investigate changes in the rabbit retina after short-term and small amounts tamponade of perfluorooctane (PFO).

METHODS:

New Zealand rabbits were used, and 48 eyes were randomly and evenly assigned into four different groups. The PFO groups received a residue of 0.1 mL of PFO for ophthalmic surgery or 0.1 mL of F-Octane at the end of surgery; eyes from the pars plana vitrectomy (PPV) group were filled with balanced salt solution and those having not received surgical intervention served as controls. Eyes were collected at 1, 4 and 12wk and studied.

RESULTS:

Under a microscope, nuclear counts of the inner nuclear layer (INL) and outer nuclear layer (ONL) did not differ among the four groups at all time points; however, slight disarrangement of the ONL and occasional vacuolization of the INL were found in the inferior retina only at 12wk in two PFO groups. Four of the groups had similar results of Caspase-3 and TNF-α staining at all time points. Alternatively, IL-8 was increased in PFOa and PPV control groups at 4wk and in all three PPV groups at 12wk; also, the apoptotic index (%) was similarly increased in all three PPV groups at 4 and 12wk.

CONCLUSION:

Both PFOs are well tolerated in rabbit eyes for up to 12wk, which suggests that they can be used safely as intraoperative tools or for short-term and small amounts tamponade after surgery.

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14. Sci Rep. 2019 Mar 26;9(1):5144. doi: 10.1038/s41598-019-41462-0.

Calcitonin native prefibrillar oligomers but not monomers induce membrane damage

that triggers NMDA-mediated Ca^{2+}-influx, LTP impairment and neurotoxicity.

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Abstract

Amyloid protein misfolding results in a self-assembling aggregation process, characterized by the formation of typical aggregates. The attention is focused on pre-fibrillar oligomers (PFOs), formed in the early stages and supposed to be neurotoxic. PFOs structure may change due to their instability and different experimental protocols. Consequently, it is difficult to ascertain which aggregation species are actually neurotoxic. We used salmon Calcitonin (sCT) as an amyloid model whose slow aggregation rate allowed to prepare stable samples without photochemical cross-linking. Intracellular Ca^{2+} rise plays a fundamental role in amyloid protein-induced neurodegerations. Two paradigms have been explored: (i) the "membrane permeabilization" due to the formation of amyloid pores or other types of membrane damage; (ii) "receptor-mediated" modulation of Ca^{2+} channels. In the present paper, we tested the effects of native sCT PFOs- with respect to Monomer-enriched solutions in neurons characterized by an increasing degree of differentiation, in terms of -Ca^{2+}-influx, cellular viability, -Long-Term Potentiation impairment, Post-Synaptic Densities and synaptophysin expression. Results indicated that PFOs-, but not Monomer-enriched solutions, induced abnormal -Ca^{2+}-influx, which could only in part be ascribed to NMDAR activation. Thus, we propose an innovative neurotoxicity mechanism for amyloid proteins where "membrane permeabilization" and "receptor-mediated" paradigms coexist.

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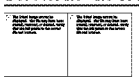

15. Microsc Res Tech. 2019 Mar 26. doi: 10.1002/jemt.23263. [Epub ahead of print]

A protocol for processing the delicate larval and prepupal salivary glands of Drosophila for scanning electron microscopy.

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Abstract

Although scanning electron microscopy (SEM) has been broadly used for the examination of fixed whole insects or their hard exoskeleton-derived structures, including model organisms such as Drosophila, the routine use of SEM to evaluate vulnerable soft internal organs and tissues was often hampered by their fragile nature and frequent surface contamination. Here, we describe a simple four-step protocol that allows for the reliable and reproducible preparation of the larval and prepupal salivary glands (SGs) of Drosophila for SEM devoid of any surface contamination. The steps are to: first, proteolytically digest the adhering fat body; second, use detergent washes to remove contaminating coarse tissue fragments, including sticky remnants of the fat body; third, use nonionic emulsifying polysorbate emulsifiers to remove fine contaminants from the SGs surface; and fourth, use aminopolycarboxylate-based chelating agents to detach sessile hemocytes. Short but repeated rinses in 100 μL of a saline-based buffer between steps ensure efficient removal of remnants removed by each treatment. After these steps, the SGs are fixed in glutaraldehyde, postfixed in osmium tetroxide, dehydrated, critically point-dried, mounted on aluminum stubs, sputter coated with gold-palladium alloy and examined in the SEM.

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PMID: 30912875
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[Environmental risk factors for asthma developement].

[Article in French]
Leynaert B[1], Le Moual N[2], Neukirch C[3], Siroux V[4], Varraso R[2].

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Abstract

The prevalence of asthma has increased rapidly since the early 1970s, and only changes in exposure to environmental factors; which go together with changes in lifestyle, are likely to explain such a rapid increase. Exposure to allergens is a risk factor for allergic sensitization, and allergic sensitization is a risk factor for allergic asthma. However, apart from indoor mold exposure as a risk factor for childhood asthma, there is insufficient evidence to conclude that the associations between allergen exposure and asthma development are causal. A new challenge for research is to analyze the huge amount of data derived from the metagenomic characterization of the environmental and human microbiome, to understand the role of interactions between viruses, bacteria and allergens in the development of asthma. It is recognized that prenatal and postnatal exposure to air pollution and maternal smoking increase the risk of developing asthma in children. In adults, the data are scarce and the results remain controversial as regards these exposures and asthma incidence. Further research is needed to appraise the effect of exposure to phenols, phthalates and perfluorinated compounds, which are widespread in the environment and may be associated with asthma, especially in children. Frequent use of chemicals for home cleaning especially in the form of sprays - which is a common practice at the population level - is a risk factor for the development of adult asthma. The domestic use of cleaning products might also be a risk factor for asthma in children exposed at home. The chemicals involved in these relationships are still to be identified. Occupational asthma is a major phenotype of adult asthma. A significant part of these asthma cases might relate to occupational exposure to cleaning products. While there is evidence of associations between diet during pregnancy or during childhood and the risk of developing asthma in children, the data in adults are insufficient. Beyond genetic factors, body composition is influenced by dietary choices and physical activity. Further research is needed to clarify the complex interplay between these nutritional factors and asthma development. The new challenge for research is to decipher the role of all the environmental factors to which the individual is exposed since conception ("exposome") in the development of asthma, using a holistic approach.

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17. BMC Infect Dis. 2019 Mar 25;19(1):281. doi: 10.1186/s12879-019-3900-z.

Ten years of external quality assessment (EQA) of Neisseria gonorrhoeae antimicrobial susceptibility testing in Europe elucidate high reliability of data.

Cole MJ[1], Quaye N[2], Jacobsson S[3], Day M[4], Fagan E[5], Ison C[6], Pitt R[4], Seaton S[5], Woodford N[4], Stary A[7], Pleininger S[8], Crucitti T[9], Hunjak B[10], Maikanti P[11], Hoffmann S[12], Viktorova J[13], Buder S[14], Kohl P[14], Tzelepi E[15], Siatravani E[15], Balla E[16], Hauksdóttir GS[17], Rose L[18], Stefanelli P[19], Carannante A[19], Pakarna G[20], Mifsud F[21], Cassar RZ[21], Linde I[22], Bergheim T[23], Steinbakk M[24], Mlynarczyk-Bonikowska B[25], Borrego MJ[26], Shepherd J[27], Pavlik P[28], Jeverica S[29], Vazquez J[30], Abad R[30], Weiss S[4,31,32], Spiteri G[32], Unemo M[3].

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Abstract

BACKGROUND:

Confidence in any diagnostic and antimicrobial susceptibility testing data is provided by appropriate and regular quality assurance (QA) procedures. In Europe, the European Gonococcal Antimicrobial Susceptibility Programme (Euro-GASP) has been monitoring the antimicrobial susceptibility in Neisseria gonorrhoeae since 2004. Euro-GASP includes an external quality assessment (EQA) scheme as an essential component for a quality-assured laboratory-based surveillance programme. Participation in the EQA scheme enables any problems with the performed antimicrobial susceptibility testing to be identified and addressed, feeds into the curricula of laboratory training organised by the Euro-GASP network, and assesses the capacity of individual laboratories to detect emerging new, rare and increasing antimicrobial resistance phenotypes. Participant performance in the Euro-GASP EQA scheme over a 10 year period (2007 to 2016, no EQA in 2013) was evaluated.

METHODS:

Antimicrobial susceptibility category and MIC results from the first 5 years (2007-2011) of the Euro-GASP EQA were compared with the latter 5 years (2012-2016). These time periods were selected to assess the impact of the 2012 European Union case definitions for the reporting of antimicrobial susceptibility.

RESULTS:

Antimicrobial susceptibility category agreement in each year was ≥91%. Discrepancies in susceptibility categories were generally because the MICs for EQA panel isolates were on or very close to the susceptibility or resistance breakpoints. A high proportion of

isolates tested over the 10 years were within one (≥90%) or two (≥97%) MIC $\log_2$ dilutions of the modal MIC, respectively. The most common method used was Etest on GC agar base. There was a shift to using breakpoints published by the European Committee on Antimicrobial Susceptibility Testing (EUCAST) in the latter 5 years, however overall impact on the validity of results was limited, as the percentage categorical agreement and MIC concordance changed very little between the two five-year periods.

CONCLUSIONS:

The high level of comparability of results in this EQA scheme indicates that high quality data are produced by the Euro-GASP participants and gives confidence in susceptibility and resistance data generated by laboratories performing decentralised testing.

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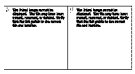

18. Environ Int. 2019 Mar 22;127:85-93. doi: 10.1016/j.envint.2019.03.035. [Epub ahead of print]

Structure-based investigation on the association between perfluoroalkyl acids exposure and both gestational diabetes mellitus and glucose homeostasis in pregnant women.

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Abstract

BACKGROUND:

Biomonitoring studies have shown the presence of structurally diverse perfluoroalkyl acids (PFAAs) in humans but only a few studies are available regarding the differential structural effects of PFAAs on human health.

OBJECTIVE:

The specific association between different structural PFAAs and both gestational diabetes mellitus (GDM) and glucose homeostasis in pregnant women was investigated.

METHODS:

A prospective nested case-control study including 439 women was conducted during 2013-2015 in Beijing, China. First trimester maternal serum was collected and analyzed for 25 diverse PFAAs with varying carbon chain lengths, linear/branched isomers and carboxylate or sulfonate functional groups. The analyzed PFAAs were grouped into different exposure variables depending on structure characteristics. GDM cases were diagnosed at 24-28 weeks of gestation and individually matched in a 1:2 ratio to controls. Conditional logistic and linear regression was used to evaluate the association between structurally grouped PFAAs and both GDM risk and glucose homeostasis parameters.

RESULTS:

Among the 25 PFAAs, 12 perfluoroalkyl carboxylates (PFCAs) and 8 perfluoroalkyl sulfonates (PFSAs) were detected in >55.0% of samples and were respectively grouped into different structural groups. The structural-based effect was observed for PFCAs, where short-chain (C4-C7) PFCAs continuous level was significantly associated with GDM with an estimated odds ratio (OR) of 1.99 (95% CI: 1.29, 3.09), and the multivariable-adjusted ORs (95% CI) of GDM for increasing tertiles of short-chain PFCAs were 1.00 (ref.), 1.82 (0.80, 4.16) and 3.01 (1.31, 6.94), P trend = 0.011. Additionally, increased concentration of short-chain PFCAs was significantly associated with higher postprandial glucose levels ($P < 0.05$). Non-significant association was observed between structure grouped PFSAs and GDM as well as glucose homeostasis.

CONCLUSION:

This investigation suggests a structure-specific association between short-chain PFCAs exposure and both GDM risk and impaired glucose homeostasis in pregnant women. These findings warrant further investigation with larger samples and a wide range of short-chain PFCAs exposure.

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19. Chemosphere. 2019 Mar 19;226:17-23. doi: 10.1016/j.chemosphere.2019.03.095. [Epub ahead of print]

Prenatal exposure to perfluorobutanesulfonic acid and childhood adiposity: A prospective birth cohort study in Shanghai, China.

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Abstract

BACKGROUND:

Several per- and polyfluoroalkyl substances (PFAS) have been phased out due to their adverse effects, and replaced by the short-chain perfluorobutanesulfonic acid (PFBS). However, the long-term impacts of PFBS on human health are unknown.

OBJECTIVE:

We aimed to investigate the association between prenatal exposure to PFAS, especially PFBS and childhood adiposity at 5 years of age.

METHODS:

We conducted a prospective birth cohort study involving 1,140 pregnant women from 2012 to 2017 in Shanghai. Fetal umbilical cord blood was collected at birth. A total of 404 children (196 girls) completed the adiposity measurements using a bioelectrical impedance analysis method and cord plasma PFAS measurements using LC-MS/MS. Multivariable linear models after adjustment for potential confounders were used to evaluate the associations between PFAS and childhood adiposity.

RESULTS:

The median concentration of PFAS in the cord plasma ranged from 0.05 (PFBS) to 6.74 ng/mL (PFOA). Results of multivariable linear regression found that in girls, PFBS had a significant positive association with waist circumference and waist to height ratio (P-values < 0.05). Girls in the highest tertile of PFBS concentrations had more fat mass, as well as higher body fat percentage, waist circumference, and waist to height ratio compared to those in the lowest tertile. However, girls in the second tertile of PFDoA had lower body fat percentage, waist circumference and fat mass.

CONCLUSIONS:

Adiposity at 5 years of age shows a positive association with prenatal exposure to PFBS in girls. These findings need to be further verified in larger prospective studies.

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PMID: 30908964
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20. Food Chem Toxicol. 2019 May;127:280-287. doi: 10.1016/j.fct.2019.03.032. Epub 2019 Mar 21.

Do conventional cooking methods alter concentrations of per- and polyfluoroalkyl substances (PFASs) in seafood?

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Abstract

Per-and poly-fluoroalkyl substances (PFASs) are bioaccumulative chemicals of emerging concern. Some PFASs accumulate in seafood, and can contribute to dietary exposure. Previous work has suggested cooking seafood decreases concentrations of neutral organic contaminants, however, previous studies dealing with PFASs have shown conflicting results. In this study, the potential changes of PFAS concentrations as a result of boiling, frying and baking are systematically examined. Blue Swimmer Crab (Portunus armatus), Dusky Flathead (Platycephalus fuscus) and School Prawn (Metapenaeus macleayi) were obtained from near a known PFAS point source and a reference location (affected by diffuse sources). Raw and cooked samples were analysed for commonly found PFASs. Of 23 target analytes, PFOS was the most frequently detected compound. PFOS, PFHxS and PFOA concentrations in School Prawn effectively doubled after boiling, and PFOS increased when Dusky Flathead was baked. There was no significant difference in PFOS concentration when Dusky Flathead was fried, or when the Blue Swimmer Crab was boiled. PFHxS and PFOA concentrations in Blue Swimmer Crab effectively halved after boiling. Increase in PFAS concentrations possibly arise from mass loss during the cooking process. Our data show that cooking does not consistently reduce PFAS concentrations, and cannot mitigate dietary exposure.

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PMID: 30905867

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Per- and polyfluoroalkyl substances (PFAS) in Australia: Current levels and estimated population reference values for selected compounds.

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Abstract

BACKGROUND:

Increased public awareness of PFAS contamination in Australia has resulted in serum biomonitoring efforts in individuals in potentially affected communities. However, population-based reference values for assessing whether individual results exceed the typical range in the Australian general population are not currently available.

OBJECTIVE:

Estimate population upper bound reference values based on updated serum PFAS concentrations in pooled samples from southeast Queensland, Australia and population variation observed in the US National Health and Nutrition Examination Survey (NHANES) datasets.

METHODS:

We calculated ratios of 95th percentile to arithmetic mean (P95:AM ratios) using data from the NHANES 2013-14 and 2015-16 cycle samples for frequently detected PFASs: PFOA, linear and branched PFOS, perfluorononanoate (PFNA), perfluorodecanoate (PFDA), and perfluorohexanesulfonate (PFHxS). We estimated Australian age-specific means for PFAS using pooled serum samples collected in 2014-15 and 2016-17. We used the P95:AM ratios to estimate 95th percentile concentrations in the Australian population based on the results of the 2016-17 pooled samples.

RESULTS AND CONCLUSIONS:

P95:AM ratios for each PFAS were similar across NHANES cycle and age group, so overall compound-specific ratios were estimated for PFOA (2.1), PFNA (2.4), PFDA (2.7), PFHxS (2.7), and linear (2.4) and summed PFOS (2.3). Australian mean PFAS concentrations continued previously reported declining trends. The estimated P95 values can be used as preliminary substitutes for more rigorous population reference values to identify samples with clearly elevated serum PFAS concentrations in Australian biomonitoring efforts. Given uncertainties and variability inherent in this evaluation, the estimated P95 values should be interpreted with caution. Mean and estimated P95 serum PFAS concentrations in Australia should continue to be monitored to document declining trends in population serum concentrations.

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PMID: 30898527

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22. J Anim Ecol. 2019 Mar 21. doi: 10.1111/1365-2656.12982. [Epub ahead of print]

Contribution of predation to the biological control of a key herbivorous pest in citrus agroecosystems.

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Abstract

Biological control has traditionally simplified the view of trophic relationships between herbivorous pests and their natural enemies in agriculture. The success or failure of this pest management strategy is still mainly attributed to the ability of a few key natural enemies to suppress the pest density. For example, successful regulation of the California red scale (Aonidiella aurantii), a key citrus pest, is generally credited to specific parasitoids of the Aphytis genus. Currently, research is revealing how herbivore regulation in agroecosystems can be alternatively achieved with a greater number of trophic associations within the system. The goals of the present study were as follows: i) to unravel species-specific trophic links between A. aurantii and its natural enemies in citrus agroecosystems, and ii) to assess their contribution to control of A. aurantii. Predation and parasitism of this herbivorous pest were assessed through exclusion experiments. Species-specific trophic links between this herbivorous pest and its natural enemies were studied using gut-content analysis of field-collected predators employing prey-specific DNA molecular markers. Relative predation rates of the species involved in A. aurantii regulation were estimated. Predation was found to be the main biotic component of A. aurantii mortality, causing reductions of more than 75% in recently settled cohorts. Aonidiella aurantii DNA was detected in the digestive system of 11 species of predators. Generalist and stenophagous predators, mainly associated with other citrus pests such as aphids, proved to be the most important biological control agents of this pest. Complex trophic relationships, such as apparent competition between two key citrus pests, were revealed. The present study highlights the role of predation as biotic mortality factor of key pests in perennial agroecosystems, wherein it is a rich complex of indigenous or naturalized generalist predators that are primarily responsible for this mortality. The results herein presented may therefore offer another perspective on the biological control of one of the key world-wide citrus pests, at least in those regions where specific parasitoids are not able to successfully regulate the scale populations.

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PMID: 30895609

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[Influence of low dose perfluorooctanoate acid exposure to the cell proliferation, migration and invasion of the human muscle rhabdomyosarcoma cell line].

[Article in Chinese; Abstract available in Chinese from the publisher]

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Abstract

Objective: This study aimed to explore the effect of perfluorooctanoate acid (PFOA) on the proliferation, migration and invasion of the human muscle rhabdomyosarcoma RD cell line and its related mechanisms. **Methods:** RD cells were cultured and exposed to PFOA of different concentrations with 6-72 hours. The cell viability was assessed by cell counting kit-8 (CCK-8) assay. Wound healing and transwell filter assay were used to evaluated the migration and invasion ability of the RD cells respectively. The cell cycles were detected by Flow cytometry. Quantitative real-time PCR and Western blot were used to quantify the mRNA and protein expression difference of related genes, respectively. **Results:** CCK-8 assay showed that, after treated the RD cell with different dose of PFOA for 72 h, low dose PFOA (1,10,50, 100 μmol/L) promotes the proliferation of RD cells while high dose PFOA (250, 500 mol/L) inhibits the proliferation ($P<0.001$). Flow cytometry showed that compared with the control group, there was no significant difference in G0/G1 phase, while cells in S phase deceased and G2/M phase cells increased after treated with PFOA (50 μmol/L) for 72 h. The relative proportions of S and G2/M were significantly different between the two groups ($P<0.01$). The results of qPCR showed that the mRNA relative expression of CDK2 of the control group and the PFOA (50 μmol/L) group were 0.97±0.07 and 2.64±0.11 respectively, and there was a significant difference ($t=12.60$, $P<0.001$); The mRNA relative expression of cyclin E2 of the control group and the PFOA (50 μmol/L) group were 1.33±0.17 and 3.35±0.22 respectively, and there was a significant difference ($t=7.42$, $P<0.001$); The results of Western blot showed that the protein relative expression of CDK2 of the control group and the PFOA (50 μmol/L) group were 0.35±0.01 and 0.84±0.03 respectively, and there was a significant difference ($t=14.60$, $P<0.001$); The protein relative expression of cyclin E2 of the control group and the PFOA (50 μmol/L) group were 0.67±0.04 and 0.86±0.01 respectively, and there was a significant difference ($t=4.88$, $P<0.01$); There was no significant difference in the mRNA and protein expression of p21 and p53 between the

PFOA and control group (P>0.05). The wound healing rate of the PFOA (50 μmol/L) group was faster than that of the control group, and the relative migration area of the PFOA group was larger accordingly (P<0.001). After PFOA (50 μmol/L) treated, the number of the cell through the membranes was much more than the control group (t=54.40, P<0.001), which means PFOA significantly stimulated the invasion ability of the RD cells. The results of qPCR showed that the mRNA relative expression of vimentin of the control group and the PFOA (50 μmol/L) group were 0.71±0.03 and 2.53±0.16 respectively, and there was a significant difference (t=11.00, P<0.001); The mRNA relative expression of MMP2 of the control group and the PFOA (50 μmol/L) group were 1.09±0.04 and 10.73±1.20 respectively, and there was a significant difference (t=8.04, P<0.001). The results of Western blot showed that the protein relative expression of vimentin of the control group and the PFOA (50 μmol/L) group were 0.55±0.06 and 0.81±0.01 respectively, and there was a significant difference (t=4.50, P<0.05). The protein relative expression of cyclin E2 of the control group and the PFOA (50 μmol/L) group were 0.64±0.04 and 1.03±0.13 respectively, and there was a significant difference (t=2.94, P<0.05). **Conclusions:** Low dose PFOA (50 μmol/L) exposure promotes cell proliferation, migration and invasion in the human muscle rhabdomyosarcoma cell line through inducing the expressions of MMP2, vimentin and cell cycle related genes.

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Biphasic Enantioselective Fluorescent Recognition of Amino Acids by a Fluorophilic Probe.

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Abstract

A fluorophilic fluorescent probe based on a perfluoroalkyl-substituted bis(binaphthyl) compound was designed and synthesized. It displayed a highly enantioselective fluorescence response toward structurally diverse amino acids in a biphasic fluorous/aqueous system with enantiomeric fluorescent enhancement ratio (ef; $\Delta I_D / \Delta I_L$) values up to 45.2 (histidine). It can be used to determine the enantiomeric compositions

of amino acids and also allows the amino acid enantiomers to be visually discriminated. NMR and mass-spectroscopic investigations provided insights into the observed high enantioselectivity. This biphasic fluorescent recognition was used to determine the enantiomeric composition of the crude phenylalanine products generated by an enzyme-catalyzed asymmetric hydrolysis under various reaction conditions. The fluorous-phase-based fluorescence measurement under the biphasic conditions was able to minimize the interference of other reaction components and thus has potential in asymmetric reaction screening.

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25. Int Forum Allergy Rhinol. 2019 Mar 18. doi: 10.1002/alr.22319. [Epub ahead of print]

Costs and training results of an objectively validated cadaveric perfusion-based internal carotid artery injury simulation during endoscopic skull base surgery.

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Abstract

BACKGROUND:

Internal carotid artery injury (ICAI) is a rare, life-threatening complication of endoscopic endonasal approaches (EEAs). High-fidelity simulation methods exist, but optimization of the training cohort, training paradigm, and costs of simulation training remain unknown.

METHODS:

Using our previously validated, high-fidelity, perfused-cadaver model, participants attempted to manage a simulated ICAI. After a brief instructional video and coaching, the

simulation was repeated. Training success was defined as successful ICAI control on the second attempt after failure on the initial attempt. Marginal costs were measured.

RESULTS:

Seventy-two surgeons participated in the standardized simulation, which lasted ≤15 minutes. The marginal cost of simulation was $275.00 per surgeon. A total of 44.4% (n = 32) succeeded on the first attempt before training (previously proficient); 44.4% (n = 32) failed the first attempt, but succeeded after training (training successes); and 11.1% (n = 8) failed both attempts. The cost per training success was $618.75. Forty-two surgeons had never treated an ICAI, with 24 becoming training successes (57.1% overall, 82.8% when excluding previously proficient surgeons). Twenty-nine had experienced a real or simulated ICAI, with 8 (27.6% overall, 72.7% excluding previously proficient surgeons) becoming training successes. The cost per training success was lowest in the ICAI-naive group ($481.25) and highest among surgeons with simulated and real ICAI experience ($1650).

CONCLUSIONS:

Surgeons can be trained to manage ICAI in a single, brief, low-cost session. Although all groups improved, training an ICAI-naive or resident cohort may maximize training results. A perfused-cadaver model is a reproducible, realistic, and low-cost method for training surgeons to manage life-threatening ICAI during an EEA.

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Comparative Hepatotoxicity of Novel PFOA Alternatives (Perfluoropolyether Carboxylic Acids) on Male Mice.

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Abstract

As novel alternatives to perfluorooctanoic acid (PFOA), perfluoropolyether carboxylic acids (multiether PFECAs, $CF_3(OCF_2)_nCOO^-$, n = 2-4) have been detected in various environmental matrices; however, public information regarding their toxicities remains unavailable. To compare the hepatotoxicity of multiether PFECAs (e.g., PFO2HxA, PFO3OA, and PFO4DA) with PFOA, male mice were exposed to 0.4, 2, or 10 mg/kg/d of each chemical for 28 d, respectively. Results demonstrated that PFO2HxA and PFO3OA exposure did not induce marked increases in relative liver weight; whereas 2 and 10 mg/kg/d of PFO4DA significantly increased relative liver weight. Furthermore, PFO2HxA and PFO3OA demonstrated almost no accumulation in the liver or serum; whereas PFO4DA was accumulated but with weaker potential than PFOA. Exposure to 10 mg/kg/d of PFO4DA led to 198 differentially expressed liver genes (56 down-regulated, 142 up-regulated), with bioinformatics analysis highlighting the urea cycle disorder. Like PFOA, 10 mg/kg/d of PFO4DA decreased the urea cycle-related enzyme protein levels (e.g., carbamoyl phosphate synthetase 1) and serum ammonia content in a dose-dependent manner. Both PFOA and PFO4DA treatment (highest concentration) caused a decrease in glutamate content and increase in both glutamine synthetase activity and aquaporin protein levels in the brain. Thus, we concluded that PFO4DA caused hepatotoxicity, as indicated by hepatomegaly and karyolysis, though to a lesser degree than PFOA, and induced urea cycle disorder, which may contribute to the observed toxic effects.

PMID: 30865431

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Toxicokinetics of Perfluorinated Alkyl Acids Influences Their Toxic Potency in the Zebrafish Embryo (Danio rerio).

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Abstract

Perfluorinated alkyl acids (PFAA) are highly persistent and bioaccumulative and have been associated with several adverse health effects. The chemical structure mainly differs in two ways: the length of the hydrophobic alkyl chain and the type of hydrophilic end

group. Little is known how the chemical structure affects the toxicokinetics (TK) in different organisms. We studied the TK of four PFAA (PFOS, PFHxS, PFOA, and PFBA) with different chain lengths (4-8 carbons) and functional groups (sulfonic and carboxylic acid) in zebrafish (Danio rerio) embryo. The time courses of the external (ambient water) and internal concentrations were determined at three exposure concentrations from 2 up to 120 h postfertilization (hpf). Three of the four PFAA showed a biphasic uptake pattern with slow uptake before hatching (around 48 hpf) and faster uptake thereafter. A two-compartment TK model adequately described the biphasic uptake pattern, suggesting that the chorion functions as an uptake barrier until 48 hpf. The bioconcentration factors (BCF) determined at 120 hpf varied widely between PFAA with averages of approximately 4000 (PFOS), 200 (PFHxS), 50 (PFOA), and 0.8 (PFBA) L kg dry weight^{-1}, suggesting that both the alkyl chain length and the functional group influence the TK. The differences in toxic potency were reduced by 3 orders of magnitude when comparing internal effect concentrations instead of effective external concentrations.

PMID: 30844262

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Controlling the {111}/{110} Surface Ratio of Cuboidal Ceria Nanoparticles.

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Abstract

The ability to control the size and morphology is crucial in optimizing nanoceria catalytic activity as this is governed by the atomistic arrangement of species and structural features at the surfaces. Here, we show that cuboidal cerium oxide nanoparticles can be obtained via microwave-assisted hydrothermal synthesis in highly alkaline media. High-resolution transmission electron microscopy (HRTEM) revealed that the cube edges were truncated by $CeO_2\{110\}$ surfaces and the cube corners were truncated by $CeO_2\{111\}$ surfaces. When adjusting synthesis conditions by increasing NaOH concentration, the average particle size increased. Although this was accompanied by an increase of the cube faces, $CeO_2\{100\}$, the cube edges, $CeO_2\{110\}$, and cube corners, $CeO_2\{111\}$, remained of constant size. Molecular dynamics (MD) was used to rationalize this behavior and

revealed that energetically, the corners and edges cannot be atomically sharp, rather they are truncated by {111} and {110} surfaces, respectively, to stabilize the nanocube; both the experiment and simulation showed agreement regarding the minimum size of ~1.6 nm associated with this truncation. Moreover, HRTEM and MD revealed {111}/{110} faceting of the {110} edges, which balances the surface energy associated with the exposed surfaces, which follows {111} > {110} > {100}, although only the {110} surface facets because of the ease of extracting oxygen from its surface and follows {111} > {100} > {110}. Finally, MD revealed that the {100} surfaces are "liquid-like" with a surface oxygen mobility 5 orders of magnitude higher than that on the {111} surfaces; this arises from the flexibility of the surface species network that can access many different surface arrangements because of very small energy differences. This finding has implications for understanding the surface chemistry of nanoceria and provides avenues to rationalize the design of catalytically active materials at the nanoscale.

PMID: 30843391

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A Tale of Two Treatments: The Multiple Barrier Approach to Removing Chemical Contaminants During Potable Water Reuse.

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Abstract

In response to water scarcity and an increased recognition of the risks associated with the presence of chemical contaminants, environmental engineers have developed advanced water treatment systems that are capable of converting municipal wastewater effluent into drinking water. This practice, which is referred to as potable water reuse, typically relies upon reverse osmosis (RO) treatment followed by exposure to ultraviolet (UV) light and addition of hydrogen peroxide (H_2O_2). These two treatment processes individually are capable of controlling many of the chemical and microbial contaminants in wastewater; however, a few chemicals may still be present after treatment at concentrations that affect water quality. Low-molecular weight (<200 Da), uncharged

compounds represent the greatest challenge for RO treatment. For potable water reuse systems, compounds of greatest concern include oxidation products formed during treatment (e.g., N-nitrosodimethylamine, halogenated disinfection byproducts) and compounds present in wastewater effluent (e.g., odorous compounds, organic solvents). Although the concentrations of most of these compounds decrease to levels where they no longer compromise water quality after they encounter the second treatment barrier (i.e., UV/H_2O_2), low-molecular weight compounds that are resistant to direct photolysis and exhibit low reactivity with hydroxyl radical (·OH) may persist. While attempts to identify the compounds that pass through both barriers have accounted for approximately half of the dissolved organic carbon remaining after treatment, it is unlikely that a significant fraction of the remaining unknowns will ever be identified with current analytical techniques. Nonetheless, the toxicity-weighted concentration of certain known compounds (e.g., disinfection byproducts) is typically lower in RO-UV/H_2O_2 treated water than conventional drinking water. To avoid the expense associated with managing the concentrate produced by RO, environmental engineers have begun to employ alternative treatment barriers. The use of alternatives such as nanofiltration, ozonation followed by biological filtration, or activated carbon filtration avoids the problems associated with the production and disposal of RO concentrate, but they may allow a larger number of chemical contaminants to pass through the treatment process. In addition to the transformation products and solvents that pose risks in the RO-UV/H_2O_2 system, these alternative barriers are challenged by larger, polar compounds that are not amenable to oxidation, such as perfluoroalkyl acids and phosphate-containing flame retardants. To fully protect consumers who rely upon potable water reuse systems, new policies are needed to prevent chemicals that are difficult to remove during advanced treatment from entering the sewer system. By using knowledge about the composition of municipal wastewater and the mechanisms through which contaminants are removed during treatment, it should be possible to safely reuse municipal wastewater effluent as a drinking water source.

PMID: 30821146

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Bacterial Stress and Mortality may be a Source of Cell-free Enzymatic Activity in the Marine Environment.

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Abstract

Marine microbes play a central role in driving biogeochemical cycles. Microbial extracellular enzymatic activities (EEA) are the 'gatekeeper' of the marine carbon cycle, and these enzymes may be found attached to cells or dissolved (cell-free). Recent studies indicated that the proportion of dissolved enzymatic activity is generally similar to (if not higher than) cell-attached activity. Thus, it is critical to understand the sources and sinks of cell-free EEA in the ocean. We herein empirically tested whether bacterial stress and mortality (induced by mitomycin C) are a source of the cell-free EEA of alkaline phosphatase (APase), beta-glucosidase (BGase), and leucine aminopeptidase (LAPase). We found that bacterial stress and mortality caused relative increases in the proportion of dissolved relative to total EEA of up to 10.5% for APase, 13.5% for BGase, and 7.3% for LAPase. These relative increases in dissolved EEA corresponded to absolute increases in the cell-free pool of 4.8, 7.2, and 3.8% for APase, BGase and LAPase, respectively. Collectively, our results contribute relevant information on the origin of free dissolved extracellular enzymes in marine waters, indicating that bacterial stress and mortality are a source of cell-free enzymatic activity and suggesting a potential link between microbial interactions and the degradation of organic matter via the release of cell-free enzymes.

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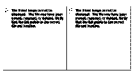

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Adipogenic Activity of Oligomeric Hexafluoropropylene Oxide (Perfluorooctanoic Acid Alternative) through Peroxisome Proliferator-Activated Receptor γ Pathway.

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Abstract

Hexafluoropropylene oxide trimer acid (HFPO-TA) and hexafluoropropylene oxide dimer acid (HFPO-DA) have been used as perfluorooctanoic acid (PFOA) alternatives in the fluoropolymer industry for years. Their widespread environmental distribution, high bioaccumulation capability, and human exposure have caused great concern. Nevertheless, their potential toxicity and health risk remain largely unknown. In the present study, we compared potential disruption effects of HFPO-TA, HFPO-DA, and PFOA on peroxisome proliferator-activated receptor γ (PPARγ) via the investigation of receptor binding, receptor activity, and cell adipogenesis effects. The receptor binding experiment showed HFPO-TA exhibited 4.8-7.5 folds higher binding affinity with PPARγ than PFOA, whereas HFPO-DA exhibited weaker binding affinity than PFOA. They also showed agonistic activity toward PPARγ signaling pathway in HEK 293 cells in the order of HFPO-TA > PFOA > HFPO-DA. Molecular docking simulation indicated HFPO-TA formed more hydrogen bonds than PFOA, whereas HFPO-DA formed fewer hydrogen bonds than PFOA. HFPO-TA promoted adipogenic differentiation and lipid accumulation in both mouse and human preadipocytes with potency higher than PFOA. Adipogenesis in human preadipocytes is a more sensitive end point than mouse preadipocytes. Collectively, HFPO-TA exerts higher binding affinity, agonistic activity, and adipogenesis activity than PFOA. The potential health risk of HFPO-TA should be of concern.

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Bioaccumulation behavior and spatiotemporal trends of per- and polyfluoroalkyl substances in Indo-Pacific humpback dolphins from the Pearl River Estuary, China.

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Abstract

Sixteen per- and polyfluoroalkyl substances (PFASs) were measured in liver (n = 52) and kidney (n = 18) tissues of Indo-Pacific humpback dolphins (Sousa chinensis) stranded in the Pearl River Estuary (PRE) of China between 2004 and 2016. The average concentrations of perfluorooctane sulfonate (PFOS), perfluorooctanoic acid (PFOA) and most of other PFASs in the liver samples were respectively greater than any records previously reported in cetaceans globally. PFOS levels in 46% of dolphin liver samples exceeded the hepatic toxicity threshold in cetaceans. For the first time, we found a U-shaped trend for the distribution pattern of perfluorinated carboxylic acids (PFCAs) between liver and kidney with increasing carbon chain lengths (C5-C16), whereas a descending trend (C4-C10) was found for perfluoroalkane sulfonic acids (PFASs), which may be explained by binding efficiencies of PFAS analogues to proteins. Dolphins with the highest levels of ∑PFASs (age-corrected) were clustered near the river outlets in Lingdingyang area, which agrees with the spatial distribution of PFASs in the environment. Significant temporal trends were observed for many PFASs. Concentrations of PFOA, perfluorononanoic acid (PFNA), perfluorodecanoic acid (PFDA) and perfluoroheptanoic acid (PFHpA) all peaked in year 2011, followed by a decreasing trend, while a consistently descending trend was shown for perfluoroundecanoic acid (PFUdA) and perfluorodecane sulfonate (PFDS). Our findings contribute to the knowledge of tissue distribution and spatiotemporal trends of PFASs in the PRE dolphins, which are valuable for us to understand the PFASs exposure risk and their industrial emission in Southern China.

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PMID: 30677968 [Indexed for MEDLINE]
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Decreased plasma levels of perfluoroalkylated substances one year after bariatric surgery.

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Abstract

Per- and polyfluoroalkylated substances (PFASs) are classified as persistent organic pollutants (POPs), and known to be protein bound. The aim of the present study was to determine the levels of 17 different PFASs before and one year after bariatric surgery, and to assess whether weight loss and changed serum protein concentrations could be influencing factors. Plasma samples from 63 patients were analyzed for nine perfluoroalkyl carboxylic acids (PFCAs), three perfluoroalkane sulfonic acids (PFSAs), and five perfluoroalkyl sulfonamide based substances (PASF) before and after surgery. Protein determination was performed in the corresponding serum samples. Mean weight loss one year after surgery was 32.1 kg. The plasma levels of all PFASs decreased with 4-34% compared to preoperative values, and included perfluorononanoic acid (PFNA), perfluorodecanoic acid (PFDA), perfluoroundecanoic acid (PFUnDA), and perfluorobutane sulfonate (PFBS), which have been identified with increasing levels in the general population during recent years. Serum protein concentrations also decreased with 7-8%. Although protein levels were positively correlated with PFOA, PFBS, PFHxS and PFOS, regression analysis revealed that neither weight loss nor reductions in concentrations of serum protein could explain the decreased PFAS levels. The type of surgical procedure did not influence the changes of PFAS levels between the two sample points. A reduced food intake and alterations in absorptions of nutrients after bariatric surgery may have influenced the observed decreasing plasma levels of PFASs.

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Simulating transport, flux, and ecological risk of perfluorooctanoate in a river affected by a major fluorochemical manufacturer in northern China.

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6. State Key Laboratory of Urban and Regional Ecology, Research Center for Eco-Environmental Sciences, Chinese Academy of Sciences, Beijing 100085, China; Vinayaka Mission's Research Foundation (Deemed to be University), Salem 636308, Tamilnadu, India.

Abstract

Perfluoroalkyl acids (PFAAs) have been widely detected and pose potential risks to both human and ecosystem health. Since the probation of perfluorooctane sulfonate (PFOS) by the Stockholm Convention, perfluorooctanoate (PFOA) has frequently been used as a chemical intermediate and processing aid. Owing to a lack of effective treatment technologies for PFOA, surrounding environments have been highly affected. Previous studies by our group have reported elevated PFOA levels in the Xiaoqing River, which receives sewage from a major fluorochemical manufacturer in northern China. To further

explore the transport, flux, and ecological risk of the perfluorooctanoate in the river, this study conducted a 2-year sampling campaign of surface water from 2014 to 2015. An extremely high PFOA concentration (mean: 62.3 μg L^{-1}) was observed for the Xiaoqing River in comparison with other studies. The highest average concentration and flux of PFOA were recorded in the autumn and summer, respectively. With data on selected hydrological parameters and cross-sections, PFOA concentrations were modeled using DHI MIKE 11. To explore the current loads and environmental capacity of PFOA, two scenarios (i.e., emissions based on observed concentrations and on the predicted no-effects concentration, PNEC) were set. The simulation results based on observed data showed that PFOA loads in the Xiaoqing River were 11.4 t in 2014, and 12.5 t in 2015. Based on the PNEC, the environmental carrying capacity of PFOA was estimated to be 13.9 t in 2014, and 13.8 t in 2015. The current loads of PFOA were found to approach the maximum environmental carrying capacity. Relatively high risks around both the fluorine industrial park (FIP) and estuary area were identified. In comparison with other suggested guidelines, threats to the ecological status of the river would be severe, which suggests that stringent management and emission criteria are needed for this industry.

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PMID: 30677944

Similar articles

35. Sci Total Environ. 2019 Mar 25;658:638-649. doi: 10.1016/j.scitotenv.2018.12.058. Epub 2018 Dec 7.

EStimating Contaminants tRansfers Over Complex food webs (ESCROC): An innovative Bayesian method for estimating POP's biomagnification in aquatic food webs.

Ballutaud M[1], Drouineau H[1], Carassou L[1], Munoz G[2], Chevillot X[1], Labadie P[3], Budzinski H[3], Lobry J[4].

Author information:
1. Irstea, UR EABX, Centre de Bordeaux, 50 avenue de Verdun, 33612 Cestas Cedex, France.
2. UMR CNRS 5805 EPOC, Université de Bordeaux, 351 cours de la Libération, 33405 Talence, France.
3. UMR CNRS 5805 EPOC, CNRS, 351 cours de la Libération, 33405 Talence, France.
4. Irstea, UR EABX, Centre de Bordeaux, 50 avenue de Verdun, 33612 Cestas Cedex, France. Electronic address: jeremy.lobry@irstea.fr.

Abstract

Pollution greatly impacts ecosystems health and associated ecological functions. Persistent Organic Pollutants (POPs) are among the most studied contaminants due to their persistence, bioaccumulation, and toxicity potential. Biomagnification is often described using the estimation of a Trophic Magnification Factor (TMF). This estimate is based on the relationship between contamination levels of the species and their trophic level. However, while the estimation can be significantly biased in relation to multiple sources of uncertainty (e.g. species physiology, measurement errors, food web complexity), usual TMF estimation methods typically do not allow accounting for these potential biases. More accurate and reliable assessment tool of TMFs and their associated uncertainty are therefore needed in order to appropriately guide chemical pollution management. The present work proposes a relevant and innovative TMF estimation method accounting for its many variability sources. The ESCROC model (EStimating Contaminants tRansfers Over Complex food webs), which is implemented in a Bayesian framework, allows for a more reliable and rigorous assessment of contaminants trophic magnification, in addition to accurate estimations of isotopes trophic enrichment factors and their associated uncertainties in food webs. Similar to classical mixing models used in food web investigations, ECSROC computes diet composition matrices using isotopic composition data while accounting for contamination data, leading to more robust food web descriptions. As a demonstration of the practical application of the model, ESCROC was implemented to revisit the trophic biomagnification of 5 polyfluoroalkyl substances (PFAS) in a complex estuarine food web (the Gironde, SW France). In addition to the TMF estimate and 95% confidence intervals, the model provided biomagnification probabilities associated to the investigated contaminants-for instance, 92% in the case of perfluorooctane sulfonate (PFOS)-that can be interpreted in terms of risk assessment in a precautionary approach, which should prove useful to environmental managers.

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PMID: 30580218 [Indexed for MEDLINE]

Similar articles

36. Chem Res Toxicol. 2019 Mar 18;32(3):421-436. doi: 10.1021/acs.chemrestox.8b00259. Epub 2019 Jan 7.

Kinetics of Glutathione Depletion and Antioxidant Gene Expression as Indicators of Chemical Modes of Action Assessed in Vitro in Mouse Hepatocytes with Enhanced Glutathione Synthesis.

Melnikov F[1], Botta D[2], White CC[2], Schmuck SC[2], Winfough M[3], Schaupp CM[2], Gallagher EP[2], Brooks BW[4], Williams ES[4], Coish P[1], Anastas PT[1,5], Voutchkova-Kostal A[3], Kostal J[3], Kavanagh TJ[2].

Author information:
1. Yale School of Forestry and Environmental Sciences , Yale University , New Haven , Connecticut 06520 , United States.
2. Department of Environmental and Occupational Health Sciences , University of Washington , Seattle , Washington 98195 , United States.
3. Department of Chemistry , George Washington University , Washington , D.C. 20052 , United States.
4. Department of Environmental Science , Baylor University , Waco , Texas 76798 , United States.
5. School of Public Health , Yale University , New Haven , Connecticut 06520 , United States.

Abstract

Here we report a vertically integrated in vitro - in silico study that aims to elucidate the molecular initiating events involved in the induction of oxidative stress (OS) by seven diverse chemicals (cumene hydroperoxide, t-butyl hydroperoxide, hydroquinone, t-butyl hydroquinone, bisphenol A, Dinoseb, and perfluorooctanoic acid). To that end, we probe the relationship between chemical properties, cell viability, glutathione (GSH) depletion, and antioxidant gene expression. Concentration-dependent effects on cell viability were assessed by MTT assay in two Hepa-1 derived mouse liver cell lines: a control plasmid vector transfected cell line (Hepa-V), and a cell line with increased glutamate-cysteine ligase (GCL) activity and GSH content (CR17). Changes to intracellular GSH content and mRNA expression levels for the Nrf2-driven antioxidant genes Gclc, Gclm, heme oxygenase-1 (Hmox1), and NADPH quinone oxidoreductase-1 (Nqo1) were monitored after sublethal exposure to the chemicals. In silico models of covalent and redox reactivity were used to rationalize differences in activity of quinones and peroxides. Our findings show CR17 cells were generally more resistant to chemical toxicity and showed markedly attenuated induction of OS biomarkers; however, differences in viability effects between the two cell lines were not the same for all chemicals. The results highlight the vital role of GSH in protecting against oxidative stress-inducing chemicals as well as the importance of probing molecular initiating events in order to identify chemicals with lower potential to cause oxidative stress.

PMID: 30547568

Similar articles

37. Sci Total Environ. 2019 Mar 20;657:111-123. doi: 10.1016/j.scitotenv.2018.12.072. Epub 2018 Dec 7.

Do concentrations of perfluoroalkylated acids (PFAAs) in isopods reflect concentrations in soil and songbirds? A

study using a distance gradient from a fluorochemical plant.

Groffen T[1], Eens M[2], Bervoets L[3].

Author information:
1. Systemic Physiological and Ecotoxicologal Research (SPHERE), Department of Biology, University of Antwerp, Groenenborgerlaan 171, 2020 Antwerp, Belgium; Behavioural Ecology and Ecophysiology Group (BECO), Department of Biology, University of Antwerp, Universiteitsplein 1, 2610 Wilrijk, Belgium. Electronic address: Thimo.Groffen@uantwerpen.be.
2. Behavioural Ecology and Ecophysiology Group (BECO), Department of Biology, University of Antwerp, Universiteitsplein 1, 2610 Wilrijk, Belgium. Electronic address: Marcel.Eens@uantwerpen.be.
3. Systemic Physiological and Ecotoxicologal Research (SPHERE), Department of Biology, University of Antwerp, Groenenborgerlaan 171, 2020 Antwerp, Belgium. Electronic address: Lieven.Bervoets@uantwerpen.be.

Abstract

Perfluoroalkylated acids (PFAAs) are persistent chemicals that have been detected globally in the environment and in wildlife. Although it is known that PFAAs sorb to solid matrices, little is known on PFAA concentrations in soils. PFAA pollution has often been studied in aquatic invertebrates. However, this has rarely been done on terrestrial species. In the present study, we examined whether the concentrations of 15 PFAAs in isopods (Oniscidae), collected at a fluorochemical plant and in four other areas, representing a gradient in distance from the pollution source (1 km to 11 km), were related to those in the soil and in eggs of a songbird, the great tit (Parus major), collected in the same areas. Additionally, we examined the effect of physicochemical properties such as total organic carbon (TOC) and clay content on the relationship between the concentrations in soil and isopods. Finally, we examined the composition profile in the soil and isopods. Mean PFOS and PFOA concentrations of 1700 ng/g dw and 24 ng/g dw were detected in the soil at the plant. PFOS and PFPeA were the dominant PFAAs in isopods and were detected at mean concentrations of 253 and 108 ng/g ww, respectively. The great tit eggs showed elevated mean PFOS concentrations of 55,970 ng/g ww. In most cases, PFAA concentrations decreased with increasing distance from the plant. As PFAA concentrations in isopods were correlated with concentrations in the soils, isopods could serve as a bioindicator for PFAA concentrations in soils. Additionally, there were indications that isopods could also serve as a bioindicator for PFAA concentrations in eggs of great tits. However, these indications were only the case at two locations, showing the need to further monitor the possibilities of using isopods as a bioindicator for PFAA concentrations in song bird eggs. CAPSULE: Elevated PFAA concentrations in isopods reflected concentrations in songbird eggs and in soil, indicating that trophic transfer of PFAAs from soil, via isopods, to songbirds might play a role in the PFAA exposure of terrestrial songbirds.

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PMID: 30537574 [Indexed for MEDLINE]

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Message

From: Donohue, Joyce [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BB5340EC745149EDBF80D2B8B2F9B919-JDONOHUE]
Sent: 5/23/2019 2:34:24 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Soares, Barbara [soares.barbara@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]
Subject: RE: Due 5/28/19, Advanced Notice Review for Gaballah - Developmental toxicity and tissue dose in zebrafish exposed to GenX and PFAS
Attachments: Ramho¸j et al PFHxS Thyroid manuscript_vs5-JMD.docx

The attachment includes my comments on the paper.

Joyce

From: Jacobs, Brittany
Sent: Thursday, May 23, 2019 8:43 AM
To: Soares, Barbara <soares.barbara@epa.gov>; Strong, Jamie <Strong.Jamie@epa.gov>; Miller, Gregory <Miller.Gregory@epa.gov>; Donohue, Joyce <Donohue.Joyce@epa.gov>
Subject: RE: Due 5/28/19, Advanced Notice Review for Gaballah - Developmental toxicity and tissue dose in zebrafish exposed to GenX and PFAS

I will also review. She presented at SOT and had interesting GenX data.

From: Soares, Barbara
Sent: Thursday, May 23, 2019 8:28 AM
To: Strong, Jamie <Strong.Jamie@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>; Miller, Gregory <Miller.Gregory@epa.gov>; Donohue, Joyce <Donohue.Joyce@epa.gov>
Subject: Re: Due 5/28/19, Advanced Notice Review for Gaballah - Developmental toxicity and tissue dose in zebrafish exposed to GenX and PFAS

Ok. Will do.

From: Strong, Jamie
Sent: Thursday, May 23, 2019 8:27:37 AM
To: Soares, Barbara; Jacobs, Brittany; Miller, Gregory; Donohue, Joyce
Subject: RE: Due 5/28/19, Advanced Notice Review for Gaballah - Developmental toxicity and tissue dose in zebrafish exposed to GenX and PFAS

Please request an extension. That is too quick of a turn around.

From: Soares, Barbara
Sent: Thursday, May 23, 2019 8:23 AM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>; Miller, Gregory <Miller.Gregory@epa.gov>; Donohue, Joyce <Donohue.Joyce@epa.gov>
Cc: Strong, Jamie <Strong.Jamie@epa.gov>
Subject: Fw: Due 5/28/19, Advanced Notice Review for Gaballah - Developmental toxicity and tissue dose in zebrafish exposed to GenX and PFAS

I can take a look at this one but let me know if any of you would also like to review. Aiming to get this to Jamie by this Friday given Memorial Day Weekend.

Thank you,

Barbara

From: Brady, Catherine
Sent: Tuesday, May 21, 2019 8:53 AM
To: Tucker, Nicole; Lan, Alexis; Lowenstein, Zachary; Santell, Stephanie; Soares, Barbara
Cc: Reiley, Mary; Gallagher, Kathryn; Ow Pub Tracker
Subject: Fw: Due 5/28/19, Advanced Notice Review for Gaballah - Developmental toxicity and tissue dose in zebrafish exposed to GenX and PFAS

Good Morning POCs!

Attached you will a find a new manuscript OST has received. This manuscript came in with a request for an expedited review, if your office has comments or does not have comments please email me by noon on Tuesday, May 28. Thank you and enjoy your day!

Catherine Brady
ORISE Participant
Health & Ecological Criteria Division
U.S. EPA| Office of Water|Office of Science & Technology

From: Ow Pub Tracker <OwPubTracker@cadmusgroup.com>
Sent: Monday, May 20, 2019 2:41 PM
To: Gallagher, Kathryn
Cc: Ow Pub Tracker; Reiley, Mary; Behl, Betsy; Brady, Catherine
Subject: Due 5/28/19, Advanced Notice Review for Gaballah - Developmental toxicity and tissue dose in zebrafish exposed to GenX and PFAS

Hi Kathryn,

OW received the attached manuscript: **Gaballah – Evaluation of developmental toxicity, developmental neurotoxicity, and tissue dose in zebrafish exposed to GenX and other PFAS**, and OW Transmittal Form from ORD for Advanced Notice Review. The subject matter of the

manuscript most closely aligns with the work of OST-ERAB. Please coordinate the review of the manuscript across your Office and with the other NWP Research POCs. Catherine Brady would like to know if an expedited review of the manuscript could be completed by noon of **Tuesday, May 28**. The authors have requested an expedited review to meet their deadline for publication. Mary will forward the review to Ed Ohanian and Owen McDonough for clearance and then return the cleared review to ORD.

Please include both Mary, Catherine, and Cadmus on correspondence regarding this review so that the spreadsheet tracking the manuscript reviews can be kept current. Please contact Cadmus and cc Mary and Catherine if you have questions or delays.

Thanks,

Alex Taylor | Research Analyst
The Cadmus Group LLC
3100 Clarendon Blvd, Suite 400 | Arlington, VA 22201
(703) 247-6144

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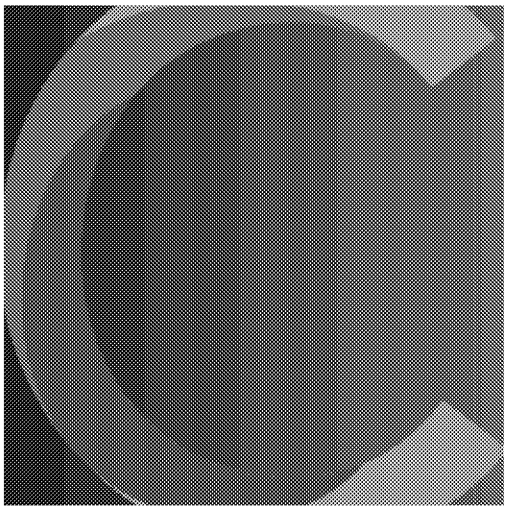

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Message

From: Donohue, Joyce [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BB5340EC745149EDBF80D2B8B2F9B919-JDONOHUE]
Sent: 1/31/2018 8:37:35 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: RE: Gen-X published studies
Attachments: GenX Tox in Holland.pdf

Did I also send you the Dutch assessment. If not it is attached.

From: Jacobs, Brittany
Sent: Wednesday, January 31, 2018 3:30 PM
To: Donohue, Joyce <Donohue.Joyce@epa.gov>
Subject: RE: Gen-X published studies

Thanks for sending these Joyce. Luckily you sent me everything you had on GenX while I was on my OGWDW rotation so I am familiar with these studies.

From: Donohue, Joyce
Sent: Wednesday, January 31, 2018 3:22 PM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: Gen-X published studies

There is not much that is published.

Message

From: Donohue, Joyce [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BB5340EC745149EDBF80D2B8B2F9B919-JDONOHUE]
Sent: 7/8/2020 2:28:07 PM
To: Strong, Jamie [Strong.Jamie@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]
Subject: FW: Boron nitride destroys PFAS 'forever' chemicals PFOA, GenX - shared with me by Marion Olsen

---

From: Olsen, Marian <Olsen.Marian@epa.gov>
Sent: Wednesday, July 8, 2020 10:15 AM
To: Donohue, Joyce <Donohue.Joyce@epa.gov>
Subject: FW: Boron nitride destroys PFAS 'forever' chemicals PFOA, GenX

From: Burgess, Michele <Burgess.Michele@epa.gov>
Sent: Wednesday, July 08, 2020 10:10 AM
To: OLEM OSRTI Human Health Risk Assessors <OLEMOSRTIHumanHealthRiskAssessors@epa.gov>
Subject: FW: Boron nitride destroys PFAS 'forever' chemicals PFOA, GenX

From: Milburn, Anna <Milburn.Anna@epa.gov>
Sent: Wednesday, July 8, 2020 7:49 AM
To: Tsui-Bowen, Alethea <Tsui-Bowen.Alethea@epa.gov>; Turner, Philip <Turner.Philip@epa.gov>; Bhattacharya, Dipanjana <Bhattacharya.Dipanjana@epa.gov>; Khoury, Ghassan <Khoury.Ghassan@epa.gov>; Rauscher, Jon <Rauscher.Jon@epa.gov>
Subject: Boron nitride destroys PFAS 'forever' chemicals PFOA, GenX

https://www.sciencedaily.com/releases/2020/07/200707160153.htm

Message

From: Donohue, Joyce [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BB5340EC745149EDBF80D2B8B2F9B919-JDONOHUE]
Sent: 10/1/2020 11:57:41 AM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: RE: Study on GenX

Dear Brittany:

It is a good topic for discussion. However, for the first part of the question. Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

Joyce

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Thursday, October 1, 2020 5:23 AM
To: Donohue, Joyce <Donohue.Joyce@epa.gov>
Subject: RE: Study on GenX

Hi Joyce,

No, I don't think there is anything to prepare. I wanted to pick your memories about what the process looked like in getting his help on the HESDs and if he was working on this model independently or if we asked him to develop it.

Thanks,
Brittany

From: Donohue, Joyce <Donohue.Joyce@epa.gov>
Sent: Wednesday, September 30, 2020 4:52 PM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: RE: Study on GenX

Dear Brittany:

Thanks:

Other than looking back at the HESD for John W's modeling of the toxicokinetics, Is there anything else you want me to do to prepare for out talk tomorrow?

Joyce

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Wednesday, September 30, 2020 4:18 PM
To: Donohue, Joyce <Donohue.Joyce@epa.gov>
Subject: RE: Study on GenX

Hi Joyce,

Thanks, if you could respond to Sara, that would be great. I have attached the one Dupont study requested. Also, if you want to direct Sarah to HERO page for GenX, all of the DuPont studies with accompanying PDFs are available for download there: https://hero.epa.gov/hero/index.cfm/project/page/project_id/2627
She can type in the Dupont study number in the search bar and it will pull the study for her to download. Thanks Joyce!

Brittany

From: Donohue, Joyce <Donohue.Joyce@epa.gov>
Sent: Wednesday, September 30, 2020 2:44 PM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: FW: Study on GenX

Dear Brittany:

I received the following e-mail from Sarah. I checked my files once I was able to connect via the VPN and I have copies of all except 18405-1238. I know you have more things to balance than I do. If they are files that we can share, and you would like me to take care of it, just add the one that I am missing and I will take care of it.

In any case let me know if they are sharable of not, just so I will know. I simply responded to the e-mail I have forwarded by letting her know that I was experiencing computer problems and could not access any of my files.

Joyce

From: Yang, Sarah P - DHS <SarahP.Yang@dhs.wisconsin.gov>
Sent: Monday, September 28, 2020 2:38 PM
To: Donohue, Joyce <Donohue.Joyce@epa.gov>
Cc: gavin.dehnert@dhs.wisconsin.gov
Subject: Study on GenX

Hi Joyce,
I hope you are doing well. We are still working on developing groundwater standards for a number of PFAS. I'm wondering if EPA has copies of the following studies that we can review?
DuPont-24447 (2008)
DuPont-24459 (2008)
DuPont-17751-1026 (2009)
DuPont-18405-1307 (2010)
DuPont-18405-1238 (2013)
DuPont-18405-1037 (2010)
DuPont-18405-841 (2010)

Also, do you have any updates on the status of the draft GenX health values document?

Thanks!
Sarah

Sarah Yang, Ph.D.
Toxicologist
Bureau of Environmental and Occupational Health
Wisconsin Division of Public Health
Mobile: 608-334-3841
SarahP.Yang@dhs.wisconsin.gov

Appointment

From: Euling, Susan [Euling.Susan@epa.gov]
Sent: 9/22/2021 3:16:11 AM
To: gaz5@cdc.gov; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]; Soares, Barbara [soares.barbara@epa.gov]; hga0@cdc.gov
CC: Buser, Melanie (ATSDR/OAD/OIA) [wyf9@cdc.gov]; Ruiz, Patricia (ATSDR/DTHHS/OD) [doz8@cdc.gov]; Prussia, Andrew James (ATSDR/OAD/OIA) [xby2@cdc.gov]

Subject: ATSDR-EPA discussion of EPA's Toxicity Assessment for GenX chemicals
Attachments: 091921 EPA Final Toxicity Assessment for GenX chems briefing ATSDR DO NOT DISTRIBUTE.pdf
Location: Microsoft Teams Meeting

Start: 9/23/2021 1:00:00 PM
End: 9/23/2021 2:00:00 PM
Show Time As: Tentative

Required Attendees: gaz5@cdc.gov; Jacobs, Brittany; Miller, GregoryG; Behl, Betsy; Donohue, Joyce; Soares, Barbara; Abadin, Henry (ATSDR/DTHHS/ETB)
Optional Attendees: Buser, Melanie (ATSDR/OAD/OIA); Ruiz, Patricia (ATSDR/OAD/OIA); Prussia, Andrew James (ATSDR/OAD/OIA)

This meeting will be an opportunity for ATSDR to provide verbal comments on the pre-publication version of EPA's final toxicity assessment for GenX chemicals.

We look forward to your valuable input.

We request that you please ***DO NOT DISTRIBUTE, CITE, OR QUOTE*** the briefing slides (attached) or the draft document (provided by Betsy).

Thank you.

Susan Euling, Ph.D.
Human Health Risk Assessment Branch/HECD
Office of Science and Technology, Office of Water
U.S. Environmental Protection Agency
(o) 202-566-2717
(awl) Ex. 6 Personal Privacy (PP)

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Message

From: Miller, Gregory [Miller.Gregory@epa.gov]
Sent: 2/8/2018 3:09:51 PM
To: Jacobs, Brittany [jacobs.brittany@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]
CC: Strong, Jamie [Strong.Jamie@epa.gov]
Subject: NC DEQ GenX pdfs

I downloaded the files from the NC DEQ website. There are 93 files. Not clear how many overlap with the 55 Dupont SharePoint pdfs that OPPT shared with us. I put the NC files here:

Ex. 6 Personal Privacy (PP)

Message

From: Strong, Jamie [Strong.Jamie@epa.gov]
Sent: 2/20/2018 12:58:50 PM
To: Jacobs, Brittany [jacobs.brittany@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]
Subject: RE: GenX Assessment Check In

I meant to propose Wednesday at 10 not today

-----Original Appointment-----
From: Jacobs, Brittany
Sent: Thursday, February 08, 2018 11:11 AM
To: Jacobs, Brittany; Donohue, Joyce; Strong, Jamie; Miller, Gregory
Subject: GenX Assessment Check In
When: Tuesday, February 20, 2018 10:00 AM-11:00 AM (UTC-05:00) Eastern Time (US & Canada).
Where: DCRoomWest-5231AA/DC-CCW-OST

Jamie proposed this new time for today, let me know if it works

Message

From: Behrsing, Tracy [behrsing.tracy@epa.gov]
Sent: 2/27/2018 7:04:03 PM
To: Babcock, Amy [babcock.amy@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]; Henry, Tala [Henry.Tala@epa.gov]; Aubee, Catherine [Aubee.Catherine@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]; Benson, Amy [Benson.Amy@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]
Subject: RE: CSS AOPDD Webinar: Earl Gray, GenX in vitro and in vivo

A head's up, this is 2-2:45 central time (3-3:45 EST).

Tracy

From: Babcock, Amy
Sent: Tuesday, February 27, 2018 1:20 PM
To: Strong, Jamie <Strong.Jamie@epa.gov>; Henry, Tala <Henry.Tala@epa.gov>; Aubee, Catherine <Aubee.Catherine@epa.gov>; Behrsing, Tracy <behrsing.tracy@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>; Miller, Gregory <Miller.Gregory@epa.gov>; Donohue, Joyce <Donohue.Joyce@epa.gov>; Benson, Amy <Benson.Amy@epa.gov>; Behl, Betsy <Behl.Betsy@epa.gov>
Subject: RE: CSS AOPDD Webinar: Earl Gray, GenX in vitro and in vivo

I will attend.

OPPT colleagues – this is the same time as our Town Hall with Jeff. Would you please let me know the updates he gives?

Thanks,
Amy

From: Strong, Jamie
Sent: Tuesday, February 27, 2018 1:04 PM
To: Henry, Tala <Henry.Tala@epa.gov>; Aubee, Catherine <Aubee.Catherine@epa.gov>; Behrsing, Tracy <behrsing.tracy@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>; Miller, Gregory <Miller.Gregory@epa.gov>; Donohue, Joyce <Donohue.Joyce@epa.gov>; Benson, Amy <Benson.Amy@epa.gov>; Babcock, Amy <babcock.amy@epa.gov>; Behl, Betsy <Behl.Betsy@epa.gov>
Subject: FW: CSS AOPDD Webinar: Earl Gray, GenX in vitro and in vivo

Apparently Earl is talking about research to CSS today… see below.

From: Ohanian, Edward
Sent: Tuesday, February 27, 2018 1:01 PM
To: Strong, Jamie <Strong.Jamie@epa.gov>; Behl, Betsy <Behl.Betsy@epa.gov>
Subject: FW: CSS AOPDD Webinar: Earl Gray, GenX in vitro and in vivo

FYI

Edward V. Ohanian, Ph.D.
Associate Director for Science
USEPA/Office of Water (MC: 4301T)
(202) 566-1117 (Voice)

(202) 566-0441(Fax)

-----Original Appointment-----
From: Ohanian, Edward
Sent: Thursday, February 15, 2018 4:36 PM
To: Villeneuve, Dan
Subject: Accepted: CSS AOPDD Webinar: Earl Gray, GenX in vitro and in vivo
When: Tuesday, February 27, 2018 2:00 PM-2:45 PM (UTC-06:00) Central Time (US & Canada).
Where: dial: 2 Ex. 6 Personal Privacy (PP) https://epawebconferencing.acms.com/css-aopdd/

Appointment

From: Mason, Paula [Mason.Paula@epa.gov]
Sent: 3/7/2018 2:44:44 PM
To: patricia.m.underwood.civ@mail.mil; Sandra Howard [Sandra.Howard@HHS.GOV]; cibulas william (ATSDR/OA/OD [wic1@cdc.gov]; christopher.weis@nih.gov; fjh1@CDC.Gov; linda.s.wennerberg@nasa.gov; Mclain, Jennifer [Mclain.Jennifer@epa.gov]; Holsinger, Hannah [Holsinger.Hannah@epa.gov]; Wadlington, Christina [Wadlington.Christina@epa.gov]; Tiago, Joseph [Tiago.Joseph@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Behrsing, Tracy [behrsing.tracy@epa.gov]; Babcock, Amy [babcock.amy@epa.gov]; Aubee, Catherine [Aubee.Catherine@epa.gov]; Henry, Tala [Henry.Tala@epa.gov]; Orme-Zavaleta, Jennifer [Orme-Zavaleta.Jennifer@epa.gov]; Gillespie, Andrew [Gillespie.Andrew@epa.gov]; Bahadori, Tina [Bahadori.Tina@epa.gov]; Jones, Samantha [Jones.Samantha@epa.gov]; Lambert, Jason [Lambert.Jason@epa.gov]; Lavoie, Emma [Lavoie.Emma@epa.gov]; Sinks, Tom [Sinks.Tom@epa.gov]; Rodan, Bruce [rodan.bruce@epa.gov]; Mattas-Curry, Lahne [Mattas-Curry.Lahne@epa.gov]; Harper, Ashley [harper.ashley@epa.gov]; Burneson, Eric [Burneson.Eric@epa.gov]; miller.aubrey@nih.gov
CC: Owens, Beth [Owens.Beth@epa.gov]; Protzel Berman, Pamela (CDC/ONDIEH/NCEH) [pxp5@cdc.gov]; Holifield, Freeman Jr Lt Col USAF SAF-IE (US) [freeman.holifield.mil@mail.mil]; Breysse, Patrick N. (CDC/ONDIEH/NCEH) [pjb7@cdc.gov]; Rak, Drew [andrew.rak@noblis.org]; Drinkard, Andrea [Drinkard.Andrea@epa.gov]; Raffaele, Kathleen [raffaele.kathleen@epa.gov]; greg.berry@navy.mil; Vargas, Maria A CIV NAVFAC Washington [maria.vargas@navy.mil]

Subject: PFAS Toxicity Discussion - Federal
Attachments: ECOS FED PART GENX PFBS PRESENTATION 03 06 18.pptx; PFBS BIBLIO 03 02 18.docx; GENX BIBLIO 03 02 18.docx
Location: DCRoomEast2123/DC-ICC-OW-OGWDW - 2 Ex. 6 Personal Privacy (PP)

Start: 3/9/2018 7:30:00 PM
End: 3/9/2018 8:30:00 PM
Show Time As: Tentative

Required Attendees: patricia.m.underwood.civ@mail.mil; Howard, Sandra (OS/OASH); cibulas william (ATSDR/OA/OD; christopher.weis@nih.gov; fjh1@CDC.Gov; linda.s.wennerberg@nasa.gov; Mclain, Jennifer; Holsinger, Hannah; Wadlington, Christina; Tiago, Joseph; Behl, Betsy; Strong, Jamie; Jacobs, Brittany; Donohue, Joyce; Miller, Gregory; Behrsing, Tracy; Babcock, Amy; Aubee, Catherine; Henry, Tala; Orme-Zavaleta, Jennifer; Gillespie, Andrew; Bahadori, Tina (Bahadori.Tina@epa.gov); Jones, Samantha; Lambert, Jason; Lavoie, Emma; Sinks, Tom; Rodan, Bruce; Mattas-Curry, Lahne; Harper, Ashley; Burneson, Eric; miller.aubrey@nih.gov
Optional Attendees: Owens, Beth; Protzel Berman, Pamela (CDC/ONDIEH/NCEH); Holifield, Freeman Jr Lt Col USAF SAF-IE (US); Breysse, Patrick N. (CDC/ONDIEH/NCEH); Rak, Drew; Drinkard, Andrea; Raffaele, Kathleen; Berry, Greg F CIV OPNAV, N45; Vargas, Maria A CIV NAVFAC Washington

Adobe Connect Link: Ex. 6 Personal Privacy (PP)

Please note that non EPA participants may come in person as well as Adobe Connect. If you are coming to the meeting in person, inform Hannah at your earliest convenience so that she can provide a list to EPA's security staff. Please enter EPA at the 1201 Constitution Avenue, NW entrance and make sure that you have a valid photo ID. After you complete your security clearance, have the guard call Paula at 564-3773 to be escorted to conference room 2123.

Message

From: Strong, Jamie [Strong.Jamie@epa.gov]
Sent: 3/16/2018 6:35:18 PM
To: Liguori, Krista [liguori.krista@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]
Subject: Re: GenX news updates Week March 12-16

Awesome thanks Krista. This will be great.

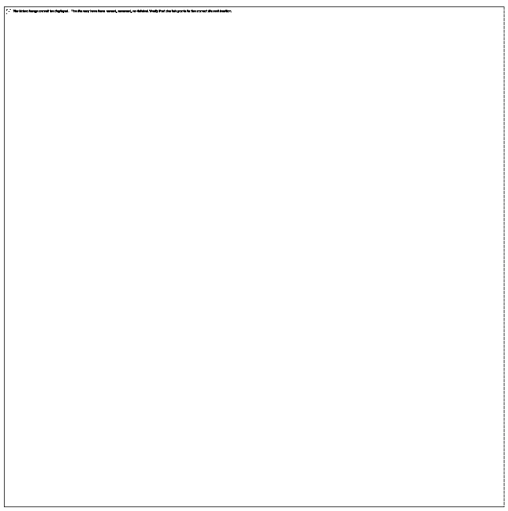
From: Liguori, Krista
Sent: Friday, March 16, 2018 2:32 PM
To: Strong, Jamie; Jacobs, Brittany; Miller, Gregory; Donohue, Joyce
Subject: GenX news updates Week March 12-16

Hi all,

Jamie asked me to send out GenX updates each week to you all. Here are the updates from a google news and pubmed search on GenX this week. Since this is the first week I started the search query I'm going to include relevant articles from the previous several weeks as well so they are not passed over.

PUBMED:

1. Comparing the toxic potency in vivo of long-chain perfluoroalkyl acids and fluorinated alternatives. Environment International. Gomis, et al. January 2018
    a. https://www.ncbi.nlm.nih.gov/pubmed/29421396 (attached)



Comparing the toxic potency in vivo of long-chain perfluoroalkyl acids and fluorinated alternatives. - PubMed - NCBI

www.ncbi.nlm.nih.gov

Environ Int. 2018 Jan 28;113:1-9. doi: 10.1016/j.envint.2018.01.011. [Epub ahead of print]

GOOGLE NEWS (March 10th to 16th):

2. "Have we been eating GenX in our food for years?" Winston-Salem Journal

a. http://www.journalnow.com/news/state_region/have-we-been-eating-genx-in-our-food-for-years/article_ebdb417a-90d2-5165-bdbb-5551e753701c.html

WINSTON-SALEM JOURNAL

Have we been eating GenX in our food for years? | State ...

www.journalnow.com

Nobody knows whether GenX may have been contaminating crops and livestock for years around the Chemours plant, where the compound is made.

3. "Cumberland County wants help providing water to GenX contamination zone" Winston Salem Journal
    a. http://www.journalnow.com/news/state_region/cumberland-county-wants-help-providing-water-to-genx-contamination-zone/article_1a83f2b9-391c-524c-9472-25ce90932683.html
4. "Wilmington officials want GenX production shut down" North Carolina Public Radio
    a. http://wunc.org/post/wilmington-officials-want-genx-production-shut-down#stream/0
5. "Editorial: Is it time to close Chemours plant and end GenX?" The Times-News
    a. http://www.thetimesnews.com/opinion/20180312/editorial-is-it-time-to-close-chemours-plant-and-end-genx
6. "Latest results show lowest GenX levels in Brunswick Co. Since Testing Began" WECT
    a. http://www.wect.com/story/37733939/latest-results-show-lowest-genx-levels-in-brunswick-co-since-testing-began
7. "Editorial, Fayetteville Observer: More calls to stop GenX production" StarNews Online
    a. http://www.starnewsonline.com/opinion/20180316/editorial-fayetteville-observer-more-calls-to-stop-genx-production

Google News from recently before March 10th that I found interesting ☺

8. "Inside the Research Lab studying how GenX Impacts Oysters" WECT6
    a. http://www.wect.com/story/37621100/inside-the-research-lab-studying-how-genx-impacts-oysters
9. "Should you get a water treatment system in response to GenX?" StarNews Online
    a. http://www.starnewsonline.com/news/20180301/should-you-get-water-treatment-system-in-response-to-genx
10. "Rainwater samples show GenX is airborne" The Fayetteville Observer
    a. http://www.fayobserver.com/news/20180223/rainwater-samples-show-genx-is-airborne

Let me know what is helpful/not helpful for me to include!

Best,

Krista Liguori, MSPH

ORISE Participant
US Environmental Protection Agency
Office of Water, Office of Science and Technology
Health and Ecological Criteria Division | Human Health Risk Assessment Branch

Message

From: Behl, Betsy [Behl.Betsy@epa.gov]
Sent: 3/8/2018 8:05:50 PM
To: Strong, Jamie [Strong.Jamie@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]
Subject: Fwd: Slides for Upcoming Briefing
Attachments: GENX UPDATE OW OPPTS webinar 3 8 2018.ppsx; ATT00001.htm; 20180308_OW PFAS Briefing.pdf; ATT00002.htm

Sent from my iPhone

Begin forwarded message:

From: "Hines, Ronald" <Hines.Ronald@epa.gov>
To: "Gillespie, Andrew" <Gillespie.Andrew@epa.gov>, "Behl, Betsy" <Behl.Betsy@epa.gov>, "Henry, Tala" <Henry.Tala@epa.gov>
Subject: Slides for Upcoming Briefing

Good afternoon,

I have attached a copy of the slides for today's briefing.

Ron Hines, PhD
Associate Director for Health
US EPA, NHEERL
109 T.W. Alexander Dr., MD 305-02
Research Triangle Park, NC 27711
Tel: 919 541-5622
Cell: 919 257-8896

Message

From: Aubee, Catherine [Aubee.Catherine@epa.gov]
Sent: 3/20/2018 12:21:57 PM
To: Strong, Jamie [Strong.Jamie@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Henry, Tala [Henry.Tala@epa.gov]; Benson, Amy [Benson.Amy@epa.gov]; Brinkerhoff, Chris [Brinkerhoff.Chris@epa.gov]; Babcock, Amy [babcock.amy@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]
Subject: RE: OST and RAD GenX Assessment Check In

Hi Jamie,

I'm ok with skipping. Any objections from other RAD folks?

Best,
Catherine

From: Strong, Jamie
Sent: Tuesday, March 20, 2018 8:20 AM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>; Henry, Tala <Henry.Tala@epa.gov>; Aubee, Catherine <Aubee.Catherine@epa.gov>; Benson, Amy <Benson.Amy@epa.gov>; Brinkerhoff, Chris <Brinkerhoff.Chris@epa.gov>; Babcock, Amy <babcock.amy@epa.gov>; Behl, Betsy <Behl.Betsy@epa.gov>; Miller, Gregory <Miller.Gregory@epa.gov>; Donohue, Joyce <Donohue.Joyce@epa.gov>
Subject: RE: OST and RAD GenX Assessment Check In

Hi everyone,
I want to propose canceling the meeting today. OW has no new updates (still digging through studies and putting the document together). We have not heard back from Jason on HERO, but will touch base with him this morning. Does OPPT have anything for today or are you all okay with skipping? We will hopefully have something (at least a start!) on the uncertainty factors next week to discuss. Please let me know if OPPT has anything specific to touch base on this week otherwise I will ask Brittany to go ahead and cancel.

Thanks,
Jamie

-----Original Appointment-----
From: Jacobs, Brittany
Sent: Monday, February 12, 2018 4:33 PM
To: Jacobs, Brittany; Behrsing, Tracy; Henry, Tala; Aubee, Catherine; Benson, Amy; Brinkerhoff, Chris; Babcock, Amy; Behl, Betsy; Strong, Jamie; Miller, Gregory; Donohue, Joyce
Subject: OST and RAD GenX Assessment Check In
When: Tuesday, March 20, 2018 12:00 PM-12:30 PM (UTC-05:00) Eastern Time (US & Canada).
Where: DCRoomWest5231L/DC-CCW-OST

Updated 2/15 with call in number

Conference phone number:
Conference ID:

Ex. 6 Personal Privacy (PP)

For OST and RAD to touch base about the GenX assessment. Scheduled through July. Hopefully we will just need the half hour, but I can extend out if needed.

This was the most available time according to the Doodle Poll sent out.

Message

From: Strong, Jamie [Strong.Jamie@epa.gov]
Sent: 4/3/2018 11:58:27 AM
To: Benson, Amy [Benson.Amy@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Behrsing, Tracy [behrsing.tracy@epa.gov]; Henry, Tala [Henry.Tala@epa.gov]; Aubee, Catherine [Aubee.Catherine@epa.gov]; Brinkerhoff, Chris [Brinkerhoff.Chris@epa.gov]; Babcock, Amy [babcock.amy@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]
Subject: RE: OST and RAD GenX Assessment Check In

I am going to have Brittany cancel the meeting. Brittany will reach out to Amy on the lit flow diagram. Thanks so much for doing that!!

Jamie

From: Benson, Amy
Sent: Monday, April 02, 2018 2:54 PM
To: Strong, Jamie <Strong.Jamie@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>; Behrsing, Tracy <behrsing.tracy@epa.gov>; Henry, Tala <Henry.Tala@epa.gov>; Aubee, Catherine <Aubee.Catherine@epa.gov>; Brinkerhoff, Chris <Brinkerhoff.Chris@epa.gov>; Babcock, Amy <babcock.amy@epa.gov>; Behl, Betsy <Behl.Betsy@epa.gov>; Miller, Gregory <Miller.Gregory@epa.gov>; Donohue, Joyce <Donohue.Joyce@epa.gov>
Subject: RE: OST and RAD GenX Assessment Check In

I have updated the lit flow diagram for the acid and will do the same for the salt today. I have a few questions related to this but can do this by email if you prefer. I might request a review of the diagrams by everyone (and will cc: Jason Lambert too).

From: Strong, Jamie
Sent: Monday, April 02, 2018 2:31 PM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>; Behrsing, Tracy <behrsing.tracy@epa.gov>; Henry, Tala <Henry.Tala@epa.gov>; Aubee, Catherine <Aubee.Catherine@epa.gov>; Benson, Amy <Benson.Amy@epa.gov>; Brinkerhoff, Chris <Brinkerhoff.Chris@epa.gov>; Babcock, Amy <babcock.amy@epa.gov>; Behl, Betsy <Behl.Betsy@epa.gov>; Miller, Gregory <Miller.Gregory@epa.gov>; Donohue, Joyce <Donohue.Joyce@epa.gov>
Subject: RE: OST and RAD GenX Assessment Check In

Hi all, I wanted to check in and see if anyone had any agenda items to discuss tomorrow. We are busy developing the document and really don't have anything to report out. We think we can better use the time tomorrow for continued document development. If you would like to meet, let me know otherwise I will have Brittany cancel.

-----Original Appointment-----
From: Jacobs, Brittany
Sent: Monday, February 12, 2018 4:33 PM
To: Jacobs, Brittany; Behrsing, Tracy; Henry, Tala; Aubee, Catherine; Benson, Amy; Brinkerhoff, Chris; Babcock, Amy; Behl, Betsy; Strong, Jamie; Miller, Gregory; Donohue, Joyce
Subject: OST and RAD GenX Assessment Check In
When: Tuesday, April 03, 2018 12:00 PM-12:30 PM (UTC-05:00) Eastern Time (US & Canada).
Where: DCRoomWest5231L/DC-CCW-OST

Updated 2/15 with call in number

Conference phone number: Ex. 6 Personal Privacy (PP)

Conference ID: Ex. 6 Personal Privacy (PP)

For OST and RAD to touch base about the GenX assessment. Scheduled through July. Hopefully we will just need the half hour, but I can extend out if needed.

This was the most available time according to the Doodle Poll sent out.

Message

From: Strong, Jamie [Strong.Jamie@epa.gov]
Sent: 4/6/2018 6:21:10 PM
To: Donohue, Joyce [Donohue.Joyce@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]
Subject: FW: GenX News Updates Week April 6
Attachments: Gomis_2018_PFAAS.pdf

Take a look at this paper…how did they do modeling for GenX?!?!?

From: Liguori, Krista
Sent: Friday, April 06, 2018 2:17 PM
To: Strong, Jamie <Strong.Jamie@epa.gov>; Donohue, Joyce <Donohue.Joyce@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>; Miller, Gregory <Miller.Gregory@epa.gov>; Behl, Betsy <Behl.Betsy@epa.gov>
Subject: GenX News Updates Week April 6

Hi all,

Here are the GenX updates this week:

PubMed/GoogleScholar March 30 - April 6

1. April 2018 – Comparing the toxic potency in vivo of long-chain perfluoroalkyl acids and fluorinated alternatives – Gomis, M., Vestergren, R., Borg, D., Cousins, I.T. Environment International [ATTACHED]
    a. https://www.sciencedirect.com/science/article/pii/S0160412017320020?via%3Dihub

Google News March 30 - April 6

1. April 3 – "UNCW Submits GenX Report to Environmental Review Commission" WWAY News
    a. https://www.wwaytv3.com/2018/04/03/uncw-submits-genx-report-to-environmental-review-commission/
2. April 3 - "Brunswick County Releases Latest GenX Numbers" WECT6
    a. http://www.wect.com/story/37871428/brunswick-county-releases-latest-genx-numbers
3. April 4 – "County Releases GenX Test Results from March Samples" Brunswick Beacon
    a. http://www.brunswickbeacon.com/content/county-releases-genx-test-results-march-samples
4. April 4 – "UNCW Researchers Release Initial Report of GenX Findings" WECT-TV6
    a. http://www.wect.com/story/37878952/uncw-researchers-release-initial-report-of-genx-findings
5. April 3 – "Little Hocking: GenX Found in Untreated Water" Parkersburg News
    a. http://www.newsandsentinel.com/news/local-news/2018/04/little-hocking-genx-found-in-untreated-water/
6. April 3 – "GenX Found in Ohio Town's Water Supply" The Fayetteville Observer
    a. http://www.fayobserver.com/news/20180403/genx-found-in-ohio-towns-water-supply
7. April 5 – "Hold the GenX: Leland Restaurant Switches to Bottled Water for Cooking" WECT6
    a. http://www.wect.com/story/37889732/hold-the-genx-leland-restaurant-switches-to-bottled-water-for-cooking
8. April 4 – "UNCW Researchers: GenX is in the Cape Fear's Sediment" StarNews Online
    a. http://www.starnewsonline.com/news/20180404/uncw-researchers-genx-is-in-cape-fears-sediment
9. April 4 – "UNCW Researchers: GenX Builds up in River Sediment, May Release Later into Drinking Water" WECT 6
    a. http://www.wect.com/story/37878952/uncw-researchers-genx-builds-up-in-river-sediment-may-release-later-into-drinking-water

Krista Liguori, MSPH
ORISE Participant
US Environmental Protection Agency
Office of Water, Office of Science and Technology
Health and Ecological Criteria Division | Human Health Risk Assessment Branch

Appointment

From: Wadlington, Christina [Wadlington.Christina@epa.gov]
Sent: 4/30/2018 8:50:32 PM
To: patricia.m.underwood.civ@mail.mil; maria.vargas@navy.mil; greg.berry@navy.mil; freeman.holifield.mil@mail.mil; andrew.rak@noblis.org; andrew.rak2.ctr@mail.mil; mark.s.johnson.civ@mail.mil; Sandra Howard [Sandra.Howard@HHS.GOV]; Suzanne_Fitzpatrick [Suzanne.Fitzpatrick@fda.hhs.gov]; Jason.Aungst@fda.hhs.gov; Penelope.Rice@fda.hhs.gov; wic1@cdc.gov; txf5@cdc.gov; pjb7@cdc.gov; Christopher.Weis@nih.gov; miller.aubrey@nih.gov; suzanne.fenton@nih.gov; fjh1@cdc.gov; pxp5@cdc.gov; linda.s.wennerberg@nasa.gov; Jim.kim@ Ex. 6 Personal Privacy (PP) ; Mclain, Jennifer [Mclain.Jennifer@epa.gov]; Holsinger, Hannah [Holsinger.Hannah@epa.gov]; Wadlington, Christina [Wadlington.Christina@epa.gov]; Tiago, Joseph [Tiago.Joseph@epa.gov]; Burneson, Eric [Burneson.Eric@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Harper, Ashley [harper.ashley@epa.gov]; Drinkard, Andrea [Drinkard.Andrea@epa.gov]; Behrsing, Tracy [behrsing.tracy@epa.gov]; Babcock, Amy [babcock.amy@epa.gov]; Aubee, Catherine [Aubee.Catherine@epa.gov]; Henry, Tala [Henry.Tala@epa.gov]; Orme-Zavaleta, Jennifer [Orme-Zavaleta.Jennifer@epa.gov]; Gillespie, Andrew [Gillespie.Andrew@epa.gov]; Bahadori, Tina [Bahadori.Tina@epa.gov]; Jones, Samantha [Jones.Samantha@epa.gov]; Lambert, Jason [Lambert.Jason@epa.gov]; Lavoie, Emma [Lavoie.Emma@epa.gov]; Owens, Beth [Owens.Beth@epa.gov]; Moore, Alexa [moore.alexa@epa.gov]; Champlin, Anna [Champlin.Anna@epa.gov]; Rodan, Bruce [rodan.bruce@epa.gov]; Mattas-Curry, Lahne [Mattas-Curry.Lahne@epa.gov]; Raffaele, Kathleen [raffaele.kathleen@epa.gov]; Gervais, Gregory [Gervais.Gregory@epa.gov]; Leonard, Paul [leonard.paul@epa.gov]; James H [Kim Ex. 6 Personal Privacy (PP) Ex. 6 Personal Privacy (PP) Devito, Michael (NIH/NIEHS) [E] [michael.devito@nih.gov]
CC: South, Paul [Paul.South@fda.hhs.gov]; Glover, Sam (CDC/NIOSH/DART) [seg3@cdc.gov]; Corack, Jennifer M CIV NAVFAC Atlantic, EV [jennifer.corack@navy.mil]; Anita.K.Meyer@usace.army.mil; Smith, James Stanley CIV USN NAVMCPUBHLTHCEN PORS (US) [james.s.smith454.civ@mail.mil]; Soares, Barbara [soares.barbara@epa.gov]; Speth, Thomas [Speth.Thomas@epa.gov]; Birnbaum, Linda (NIH/NIEHS) [E] [birnbaumls@niehs.nih.gov]; MARCEL, BARRY J DR-02 USAF AFMC USAFSAM/OECC [barry.marcel@us.af.mil]

Subject: PFAS Toxicity Discussion-Federal Briefing #2
Attachments: ECOS FED PART GENX PFBS PRESENTATION 4.27.18A.pdf
Location: 2123 EPA East - Peter Grevatt's conference line - Ex. 6 Personal Privacy (PP)

Start: 5/2/2018 7:00:00 PM
End: 5/2/2018 8:30:00 PM
Show Time As: Tentative

Required Attendees: patricia.m.underwood.civ@mail.mil; maria.vargas@navy.mil; greg.berry@navy.mil; freeman.holifield.mil@mail.mil; andrew.rak@noblis.org; andrew.rak2.ctr@mail.mil; mark.s.johnson.civ@mail.mil; Sandra.Howard@hhs.gov; Suzanne_Fitzpatrick; Jason.Aungst@fda.hhs.gov; Penelope.Rice@fda.hhs.gov; wic1@cdc.gov; txf5@cdc.gov; pjb7@cdc.gov; Christopher.Weis@nih.gov; miller.aubrey@nih.gov; suzanne.fenton@nih.gov; fjh1@cdc.gov; pxp5@cdc.gov; linda.s.wennerberg@nasa.gov; Jim.kim@ Ex. 6 Personal Privacy (PP) ; Mclain, Jennifer; Holsinger, Hannah; Wadlington, Christina; Tiago, Joseph; Burneson, Eric; Behl, Betsy; Strong, Jamie; Jacobs, Brittany; Donohue, Joyce; Miller, Gregory; Harper, Ashley; Drinkard, Andrea; behrsing.tracy@epa.gov; Babcock, Amy; Aubee, Catherine; Henry, Tala; Orme-Zavaleta, Jennifer; Gillespie, Andrew; Bahadori, Tina; Jones, Samantha; Lambert, Jason; Lavoie, Emma; Owens, Beth; Moore, Alexa; Champlin, Anna; Rodan, Bruce; Mattas-Curry, Lahne; Raffaele, Kathleen; Gervais, Gregory; Leonard, Paul; James H; James_H_Kim Ex. 6 Personal Privacy (PP) Devito, Michael (NIH/NIEHS) [E]
Optional Attendees: South, Paul; Glover, Sam (CDC/NIOSH/DART); Corack, Jennifer M CIV NAVFAC Atlantic, EV; Anita.K.Meyer@usace.army.mil; Smith, James Stanley CIV USN NAVMCPUBHLTHCEN PORS (US); Soares, Barbara; Speth, Thomas; Birnbaum, Linda (NIH/NIEHS) [E]; MARCEL, BARRY J DR-02 USAF AFMC USAFSAM/OECC

If you are planning to participate here on site at EPA, inform Hanna Holsinger. If you come in person, please enter EPA at the 1201 Constitution Avenue, NW entrance. Please make sure that you have a valid photo ID. After you complete the security clearance, have the security guard call Paula at 564-3773 to be escorted to conference room 2123.

Adobe Connect Link: Ex. 6 Personal Privacy (PP)

Meeting materials will be provided prior to the meeting.

Provided are links to chemical-specific pages for the studies cited:

GenX: https://hero.epa.gov/hero/index.cfm/project/page/project_id/2627

PFBS: https://hero.epa.gov/hero/index.cfm/project/page/project_id/2610

Appointment

From: Grevatt, Peter [Grevatt.Peter@epa.gov]
Sent: 5/3/2018 9:59:36 PM
To: patricia.m.underwood.civ@mail.mil; maria.vargas@navy.mil; greg.berry@navy.mil; freeman.holifield.mil@mail.mil; andrew.rak@noblis.org; andrew.rak2.ctr@mail.mil; mark.s.johnson.civ@mail.mil; Sandra Howard [Sandra.Howard@HHS.GOV]; Suzanne_Fitzpatrick [Suzanne.Fitzpatrick@fda.hhs.gov]; Jason.Aungst@fda.hhs.gov; Penelope.Rice@fda.hhs.gov; wic1@cdc.gov; txf5@cdc.gov; pjb7@cdc.gov; Christopher.Weis@nih.gov; miller.aubrey@nih.gov; suzanne.fenton@nih.gov; fjh1@cdc.gov; pxp5@cdc.gov; linda.s.wennerberg@nasa.gov; Kim Ex. 6 Personal Privacy (PP) Grevatt, Peter [Grevatt.Peter@epa.gov]; Mclain, Jennifer [Mclain.Jennifer@epa.gov]; Holsinger, Hannah [Holsinger.Hannah@epa.gov]; Wadlington, Christina [Wadlington.Christina@epa.gov]; Tiago, Joseph [Tiago.Joseph@epa.gov]; Burneson, Eric [Burneson.Eric@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Harper, Ashley [harper.ashley@epa.gov]; Drinkard, Andrea [Drinkard.Andrea@epa.gov]; Behrsing, Tracy [behrsing.tracy@epa.gov]; Babcock, Amy [babcock.amy@epa.gov]; Aubee, Catherine [Aubee.Catherine@epa.gov]; Henry, Tala [Henry.Tala@epa.gov]; Orme-Zavaleta, Jennifer [Orme-Zavaleta.Jennifer@epa.gov]; Gillespie, Andrew [Gillespie.Andrew@epa.gov]; Bahadori, Tina [Bahadori.Tina@epa.gov]; Jones, Samantha [Jones.Samantha@epa.gov]; Lambert, Jason [Lambert.Jason@epa.gov]; Lavoie, Emma [Lavoie.Emma@epa.gov]; Owens, Beth [Owens.Beth@epa.gov]; Moore, Alexa [moore.alexa@epa.gov]; Champlin, Anna [Champlin.Anna@epa.gov]; Rodan, Bruce [rodan.bruce@epa.gov]; Mattas-Curry, Lahne [Mattas-Curry.Lahne@epa.gov]; Raffaele, Kathleen [raffaele.kathleen@epa.gov]; Gervais, Gregory [Gervais.Gregory@epa.gov]; Leonard, Paul [leonard.paul@epa.gov]; michael.devito@nih.gov; Paul.South@fda.hhs.gov; seg3@cdc.gov; jennifer.corack@navy.mil; Anita.K.Meyer@usace.army.mil; james.s.smith454.civ@mail.mil; Soares, Barbara [soares.barbara@epa.gov]; Speth, Thomas [Speth.Thomas@epa.gov]; birnbaumls@niehs.nih.gov; barry.marcel@us.af.mil; mfocazio@usgs.gov; James_H_Kim Ex. 6 Personal Privacy (PP) Lehman, Rachel [lehman.rachel@epa.gov]

Subject: PFAS Toxicity Discussion-Federal Briefing #2 Part 2-PFBS Presentation
Attachments: ECOS FED PART GENX PFBS PRESENTATION 4.27.18A.PDF; charge questions genx pfbs 04 23 18.docx; Updated federal partner engagement schedule 5-3-18.docx
Location: Webinar - Call in information and Webinar link will be provided shortly

Start: 5/4/2018 3:00:00 PM
End: 5/4/2018 4:00:00 PM
Show Time As: Tentative

Required Attendees: patricia.m.underwood.civ@mail.mil; maria.vargas@navy.mil; greg.berry@navy.mil; freeman.holifield.mil@mail.mil; andrew.rak@noblis.org; andrew.rak2.ctr@mail.mil; mark.s.johnson.civ@mail.mil; Sandra.Howard@hhs.gov; Suzanne_Fitzpatrick; Jason.Aungst@fda.hhs.gov; Penelope.Rice@fda.hhs.gov; wic1@cdc.gov; txf5@cdc.gov; pjb7@cdc.gov; Christopher.Weis@nih.gov; miller.aubrey@nih.gov; suzanne.fenton@nih.gov; fjh1@cdc.gov; pxp5@cdc.gov; linda.s.wennerberg@nasa.gov; Kim@ Ex. 6 Personal Privacy (PP); Grevatt, Peter; Mclain, Jennifer; Holsinger, Hannah; Wadlington, Christina; Tiago, Joseph; Burneson, Eric; Behl, Betsy; Strong, Jamie; Jacobs, Brittany; Donohue, Joyce; Miller, Gregory; Harper, Ashley; Drinkard, Andrea; Behrsing, Tracy; Babcock, Amy; Aubee, Catherine; Henry, Tala; Orme-Zavaleta, Jennifer; Gillespie, Andrew; Bahadori, Tina; Jones, Samantha; Lambert, Jason; Lavoie, Emma; Owens, Beth; Moore, Alexa; Champlin, Anna; Rodan, Bruce; Mattas-Curry, Lahne; Raffaele, Kathleen; Gervais, Gregory; Leonard, Paul; michael.devito@nih.gov; Paul.South@fda.hhs.gov; seg3@cdc.gov; jennifer.corack@navy.mil; Anita.K.Meyer@usace.army.mil; james.s.smith454.civ@mail.mil; Soares, Barbara; Speth, Thomas; birnbaumls@niehs.nih.gov; barry.marcel@us.af.mil; mfocazio@usgs.gov; James_H_Kim Ex. 6 Personal Privacy (PP) Lehman, Rachel

Please see updated schedule and draft peer review charge questions

Adobe connect: Ex. 6 Personal Privacy (PP)
Call in #: + Ex. 6 Personal Privacy (PP)
Conference

Message

From: Strong, Jamie [Strong.Jamie@epa.gov]
Sent: 5/7/2018 5:23:42 PM
To: Jacobs, Brittany [jacobs.brittany@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]
Subject: RE: GenX Assessment Check In

Cancel this too

-----Original Appointment-----
From: Jacobs, Brittany
Sent: Thursday, February 08, 2018 11:11 AM
To: Jacobs, Brittany; Donohue, Joyce; Strong, Jamie; Miller, Gregory
Subject: GenX Assessment Check In
When: Tuesday, May 08, 2018 2:00 PM-3:00 PM (UTC-05:00) Eastern Time (US & Canada).
Where: DCRoomWest-5231AA/DC-CCW-OST

Message

From: Henry, Tala [Henry.Tala@epa.gov]
Sent: 5/7/2018 7:01:10 PM
To: Benson, Amy [Benson.Amy@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Aubee, Catherine [Aubee.Catherine@epa.gov]; Brinkerhoff, Chris [Brinkerhoff.Chris@epa.gov]; Babcock, Amy [babcock.amy@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]
Subject: RE: OST and RAD GenX Assessment Check In

OK with me.

Tala R. Henry, Ph.D.
Director, Risk Assessment Division
Office of Pollution Prevention and Toxics
U.S. Environmental Protection Agency

T: 202-564-2959
E: henry.tala@epa.gov

From: Benson, Amy
Sent: Monday, May 07, 2018 1:44 PM
To: Strong, Jamie <Strong.Jamie@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>; Henry, Tala <Henry.Tala@epa.gov>; Aubee, Catherine <Aubee.Catherine@epa.gov>; Brinkerhoff, Chris <Brinkerhoff.Chris@epa.gov>; Babcock, Amy <babcock.amy@epa.gov>; Miller, Gregory <Miller.Gregory@epa.gov>; Donohue, Joyce <Donohue.Joyce@epa.gov>; Behl, Betsy <Behl.Betsy@epa.gov>
Subject: RE: OST and RAD GenX Assessment Check In

Fine with me.

From: Strong, Jamie
Sent: Monday, May 07, 2018 1:23 PM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>; Behrsing, Tracy <behrsing.tracy@epa.gov>; Henry, Tala <Henry.Tala@epa.gov>; Aubee, Catherine <Aubee.Catherine@epa.gov>; Benson, Amy <Benson.Amy@epa.gov>; Brinkerhoff, Chris <Brinkerhoff.Chris@epa.gov>; Babcock, Amy <babcock.amy@epa.gov>; Miller, Gregory <Miller.Gregory@epa.gov>; Donohue, Joyce <Donohue.Joyce@epa.gov>; Behl, Betsy <Behl.Betsy@epa.gov>
Subject: RE: OST and RAD GenX Assessment Check In

OW has no updates. We are putting the finishing touches on the draft and would like to propose canceling this meeting tomorrow and using the time to work on the document. Please let me know if that is okay with OPPT.

Thanks,
Jamie

-----Original Appointment-----
From: Jacobs, Brittany
Sent: Monday, February 12, 2018 4:33 PM
To: Jacobs, Brittany; Behrsing, Tracy; Strong, Jamie; Henry, Tala; Aubee, Catherine; Benson, Amy; Brinkerhoff, Chris; Babcock, Amy; Miller, Gregory; Donohue, Joyce; Behl, Betsy
Subject: OST and RAD GenX Assessment Check In

When: Tuesday, May 08, 2018 12:00 PM-12:30 PM (UTC-05:00) Eastern Time (US & Canada).
Where: DCRoomWest5231L/DC-CCW-OST

Updated 2/15 with call in number

Conference phone number:
Conference ID:

Ex. 6 Personal Privacy (PP)

For OST and RAD to touch base about the GenX assessment. Scheduled through July. Hopefully we will just need the half hour, but I can extend out if needed.

This was the most available time according to the Doodle Poll sent out.

Message

From: Strong, Jamie [Strong.Jamie@epa.gov]
Sent: 5/15/2018 11:37:32 AM
To: Jacobs, Brittany [jacobs.brittany@epa.gov]; Henry, Tala [Henry.Tala@epa.gov]; Aubee, Catherine [Aubee.Catherine@epa.gov]; Benson, Amy [Benson.Amy@epa.gov]; Brinkerhoff, Chris [Brinkerhoff.Chris@epa.gov]; Babcock, Amy [babcock.amy@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]
Subject: RE: OST and RAD GenX Assessment Check In

All this meeting is canceled today. Betsy and Brittany are out and the document was sent for agency/interagency review yesterday. We are still waiting on the systematic review worksheets from OPPT and need to send those to the reviewers ASAP. Please let me know when you expect to send them today.

Thank you,
Jamie

-----Original Appointment-----
From: Jacobs, Brittany
Sent: Monday, February 12, 2018 4:33 PM
To: Jacobs, Brittany; Behrsing, Tracy; Strong, Jamie; Henry, Tala; Aubee, Catherine; Benson, Amy; Brinkerhoff, Chris; Babcock, Amy; Miller, Gregory; Donohue, Joyce; Behl, Betsy
Subject: OST and RAD GenX Assessment Check In
When: Tuesday, May 15, 2018 12:00 PM-12:30 PM (UTC-05:00) Eastern Time (US & Canada).
Where: DCRoomWest5231L/DC-CCW-OST

Message

From: Strong, Jamie [Strong.Jamie@epa.gov]
Sent: 6/14/2018 3:06:37 PM
To: Donohue, Joyce [Donohue.Joyce@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Soares, Barbara [soares.barbara@epa.gov]
Subject: FW: Heads up - PFAS related request for consulting

Please let me know if you are contacted by this group (or others) before engaging.

From: Jones, Samantha
Sent: Thursday, June 14, 2018 11:02 AM
To: Strong, Jamie <Strong.Jamie@epa.gov>; Behl, Betsy <Behl.Betsy@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>; Miller, Gregory <Miller.Gregory@epa.gov>
Cc: Bahadori, Tina <Bahadori.Tina@epa.gov>; Lambert, Jason <Lambert.Jason@epa.gov>; Owens, Beth <Owens.Beth@epa.gov>; Champlin, Anna <Champlin.Anna@epa.gov>
Subject: FW: Heads up - PFAS related request for consulting

Hi all,

As you can see below, one of our NCEA scientists (one who actually ISN'T working on PFAS) received an inquiry from Coleman Research regarding a paid consulting offer for GenX chemicals. It is possible that you may receive a similar request. We will not be engaging in this and have alerted our staff and management to let us know if they receive something similar.

We wanted to let you know that this was floating out there. Note the Coleman Research representative is in NC.

Thanks,
Samantha

Samantha J. Jones, PhD
NCEA Associate Director for Health (acting)
HHRA Interim Deputy National Program Director
USEPA, ORD/NCEA
(o) 202-564-6794; (m) 703-943-7990

From: Brent Watkins [mailto:bwatkins@colemanrg.com]
Sent: Monday, June 11, 2018 4:00 PM
To: Dishaw, Laura <Dishaw.Laura@epa.gov>
Subject: Consulting Opportunity - toxicology

Hi Laura,

I'm contacting you because I am assisting a client (an analyst at an investment firm) who is looking to speak to a toxicologist with a focus on PTFE (Teflon) or GenX materials. I was hoping that you may be a great contact to educate my client through a short, paid phone consultation.

My firm, Coleman Research (www.colemanrg.com), works with today's leading hedge funds, private equity firms, and management consultancies. We assist our clients with their due diligence by facilitating short-phone consultations with top industry experts like you. These calls last roughly 60 minutes and you are able to set your own hourly consulting

rate. Additionally, please be aware that no preparation work would be needed from your part, as our client simply seeks your opinion, in relation to public information only.

Would you be open to chatting for a few minutes about this opportunity?

Thank you for your time on this matter and I look forward to your response.

Best Regards,

Brent Watkins
Coleman Research | *Senior Associate*
O: 646-368-6714 | bwatkins@colemanrg.com
434 Fayetteville St, Suite 600, Raleigh, NC 27601

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Where Bright Minds Connect. Join Us.

Coleman Research's Compliance Policy: *Coleman's policies prohibit the disclosure and knowing solicitation of confidential information. Further, Experts have the opportunity to review each project invitation and decline to participate in any Research Services that the Expert believes may present a potential conflict of interest. If an Expert accepts a consultation, the Expert agrees not to disclose material, nonpublic, confidential, or proprietary information. Clients must not knowingly ask Experts to disclose such information.*

CONFIDENTIALITY: *This email and any attachments are confidential and may also be privileged. If you are not the named recipient, please notify the sender immediately and do not disclose the contents to another person, use it for any purpose, or store or copy the information in any medium.*

Appointment

From: Mason, Paula [Mason.Paula@epa.gov]
Sent: 6/20/2018 2:19:19 PM
To: patricia.m.underwood.civ@mail.mil; maria.vargas@navy.mil; wanda.holmes@navy.mil; freeman.holifield.mil@mail.mil; andrew.rak@noblis.org; andrew.rak2.ctr@mail.mil; mark.s.johnson.civ@mail.mil; jennifer.corack@navy.mil; Anita.K.Meyer@usace.army.mil; james.s.smith454.civ@mail.mil; barry.marcel@us.af.mil; Sandra Howard [Sandra.Howard@HHS.GOV]; Suzanne_Fitzpatrick [Suzanne.Fitzpatrick@fda.hhs.gov]; Jason.Aungst@fda.hhs.gov; Penelope.Rice@fda.hhs.gov; Paul.South@fda.hhs.gov; wic1@cdc.gov; txf5@cdc.gov; pjb7@cdc.gov; Christopher.Weis@nih.gov; miller.aubrey@nih.gov; suzanne.fenton@nih.gov; michael.devito@nih.gov; birnbaumls@niehs.nih.gov; fjh1@cdc.gov; seg3@cdc.gov; eaw0@cdc.gov; iwa6@cdc.gov; oii2@cdc.gov; pxp5@cdc.gov; linda.s.wennerberg@nasa.gov; James_H_Kim[redacted]; mfocazio@usgs.gov; Terra.irons@va.gov; Mclain, Jennifer [Mclain.Jennifer@epa.gov]; Holsinger, Hannah [Holsinger.Hannah@epa.gov]; Wadlington, Christina [Wadlington.Christina@epa.gov]; Tiago, Joseph [Tiago.Joseph@epa.gov]; Burneson, Eric [Burneson.Eric@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Harper, Ashley [harper.ashley@epa.gov]; Drinkard, Andrea [Drinkard.Andrea@epa.gov]; Behrsing, Tracy [behrsing.tracy@epa.gov]; Babcock, Amy [babcock.amy@epa.gov]; Aubee, Catherine [Aubee.Catherine@epa.gov]; Henry, Tala [Henry.Tala@epa.gov]; Orme-Zavaleta, Jennifer [Orme-Zavaleta.Jennifer@epa.gov]; Gillespie, Andrew [Gillespie.Andrew@epa.gov]; Bahadori, Tina [Bahadori.Tina@epa.gov]; Jones, Samantha [Jones.Samantha@epa.gov]; Lambert, Jason [Lambert.Jason@epa.gov]; Lavoie, Emma [Lavoie.Emma@epa.gov]; Owens, Beth [Owens.Beth@epa.gov]; Moore, Alexa [moore.alexa@epa.gov]; Champlin, Anna [Champlin.Anna@epa.gov]; Rodan, Bruce [rodan.bruce@epa.gov]; Mattas-Curry, Lahne [Mattas-Curry.Lahne@epa.gov]; Raffaele, Kathleen [raffaele.kathleen@epa.gov]; Gervais, Gregory [Gervais.Gregory@epa.gov]; Leonard, Paul [leonard.paul@epa.gov]; Soares, Barbara [soares.barbara@epa.gov]; Speth, Thomas [Speth.Thomas@epa.gov]; Lehman, Rachel [lehman.rachel@epa.gov]; michael.j.quinn104.civ@mail.mil; Birchfield, Norman [Birchfield.Norman@epa.gov]
CC: Albert, Ryan [Albert.Ryan@epa.gov]; Foster, Stiven [Foster.Stiven@epa.gov]; Libelo, Laurence [Libelo.Laurence@epa.gov]; Cooke, Maryt [Cooke.Maryt@epa.gov]; Burchette, John [Burchette.John@epa.gov]; Davis, Todd H. [Davis.ToddH@epa.gov]

Subject: PFAS Toxicity Assessment Discussion
Attachments: GenX PFBS_External Peer Review_charge questions_06 18 18 FINAL.docx
Location: DCRoomEast2123/DC-ICC-OW-OGWDW - [redacted]

Start: 6/20/2018 5:00:00 PM
End: 6/20/2018 6:30:00 PM
Show Time As: Tentative

Required Attendees: patricia.m.underwood.civ@mail.mil; maria.vargas@navy.mil; wanda.holmes@navy.mil; freeman.holifield.mil@mail.mil; andrew.rak@noblis.org; andrew.rak2.ctr@mail.mil; mark.s.johnson.civ@mail.mil; jennifer.corack@navy.mil; Anita.K.Meyer@usace.army.mil; james.s.smith454.civ@mail.mil; barry.marcel@us.af.mil; Sandra.Howard@hhs.gov; Suzanne_Fitzpatrick; Jason.Aungst@fda.hhs.gov; Penelope.Rice@fda.hhs.gov; Paul.South@fda.hhs.gov; wic1@cdc.gov; txf5@cdc.gov; pjb7@cdc.gov; Christopher.Weis@nih.gov; miller.aubrey@nih.gov; suzanne.fenton@nih.gov; michael.devito@nih.gov; birnbaumls@niehs.nih.gov; fjh1@cdc.gov; seg3@cdc.gov; eaw0@cdc.gov; iwa6@cdc.gov; oii2@cdc.gov; pxp5@cdc.gov; linda.s.wennerberg@nasa.gov; James_H_Kim[redacted]mfocazio@usgs.gov; Terra.irons@va.gov; Mclain, Jennifer; Holsinger, Hannah; Wadlington, Christina; Tiago, Joseph; Burneson, Eric; Behl, Betsy; Strong, Jamie; Jacobs, Brittany; Donohue, Joyce; Miller, Gregory; Harper, Ashley; Drinkard, Andrea; Behrsing, Tracy; Babcock, Amy; Aubee, Catherine; Henry, Tala; Orme-Zavaleta, Jennifer; Gillespie, Andrew; Bahadori, Tina; Jones, Samantha; Lambert, Jason; Lavoie, Emma; Owens, Beth; Moore, Alexa; Champlin, Anna; Rodan, Bruce; Mattas-Curry, Lahne; Raffaele, Kathleen; Gervais, Gregory; Leonard, Paul; Soares, Barbara; Speth, Thomas; Lehman, Rachel; michael.j.quinn104.civ@mail.mil; Birchfield, Norman
Optional Attendees: Albert, Ryan; Foster, Stiven; Libelo, Laurence; Cooke, Maryt; Burchette, John; Davis, Todd H.

Agenda: PFAS Toxicity Development Updates

1) Introduction and general questions re process and reviewers (10 min)
2) GenX chemicals assessment (20 min)
3) PFBS assessment (30 min)
4) Charge questions (30 min)

Message

From: Strong, Jamie [Strong.Jamie@epa.gov]
Sent: 7/19/2018 4:34:16 PM
To: Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]
Subject: FW: ACTION NEEDED: Update OW Fact Sheets for Administrator hearing by COB 7/23
Attachments: OW Fact Sheets.zip; OW-9-FL HHC.docx; OW-7-Fish Advice.docx; OW-13-GENX in NC.docx; OW-16-HABs in DW.docx; OW-26-PFAS.docx; OW-30-Steam Electric.docx

Importance: High

Joyce, please look at the PFOA and PFOS fact sheet below.

Britt and/or Greg, please look at GenX.

Due to me by 10am Monday. Sorry!

From: Flaherty, Colleen
Sent: Thursday, July 19, 2018 12:28 PM
To: Strong, Jamie <Strong.Jamie@epa.gov>
Subject: FW: ACTION NEEDED: Update OW Fact Sheets for Administrator hearing by COB 7/23
Importance: High

Can you have someone take a look at the fact sheets embedded below and update if necessary?

- GenX in Cape Fear (not sure if we developed this or R4??)
- PFOA/PFOS in drinking water (OGWDW lead)
- HABS (OGWDW lead)

From: Crawford, Tiffany
Sent: Thursday, July 19, 2018 11:37 AM
To: Reed, Khesha <Reed.Khesha@epa.gov>; Flaherty, Colleen <Flaherty.Colleen@epa.gov>; Scozzafava, MichaelE <Scozzafava.MichaelE@epa.gov>; Kochis, Daniel <Kochis.daniel@epa.gov>
Cc: Nagle, Deborah <Nagle.Deborah@epa.gov>; Lape, Jeff <lape.jeff@epa.gov>; Ortiz, Agnes <Ortiz.Agnes@epa.gov>
Subject: ACTION NEEDED: Update OW Fact Sheets for Administrator hearing by COB 7/23
Importance: High

Hello All –

I received this request for revised one-pagers on the following OST-related topics in preparation for the Administrator's hearing with the Senate EPW in early August (1st or 2nd tentatively):

- Steam Electric
- Fish Advice
- GenX in Cape Fear
- PFOA/PFOS in drinking water (OGWDW lead – FYI.)
- HABS (OGWDW lead – FYI)

I have attached copies of these one-pagers (last updated in April 2018) below. Based on Ann's email below, these may have been prepared through your budget folks previously as RMS, ran the original drill which produced these factsheets. If you are interested in seeing the full list of factsheets requested, the zip file is also attached with the email chain.

Dan – Do you have any additional insight on this drill? Do these factsheets represent the full universe of OST factsheets requested for the last budget-related hearing? I'm hoping to avoid any last minute request for updated material next week.

Please review and provide updated factsheets by COB Monday, 7/23.

Reminder: The OW Management Retreat is on Tuesday, so do your best to meet this deadline.

OW-9-FL HHC.docx | OW-7-Fish Advice.docx | OW-13-GENX in NC.docx | OW-16-HABs in DW.docx | OW-26-PFAS.docx | OW-30-Steam Electric.docx

Thankl you all!

Tiffany N. Crawford
Special Assistant
US Environmental Protection Agency
Office of Science and Technology
Office of Water

Other Contact Information:
Email: Crawford.Tiffany@epa.gov
Office: (202) 566-2375

From: Campbell, Ann
Sent: Wednesday, July 18, 2018 3:37 PM
To: Tiago, Joseph <Tiago.Joseph@epa.gov>; Farris, Erika D. <Farris.Erika@epa.gov>; Crawford, Tiffany <Crawford.Tiffany@epa.gov>; Huber, Patrick <Huber.Patrick@epa.gov>
Subject: ACTION: Update OW Fact Sheets for Administrator hearing by 2p 7/24

Aloha friends! Elizabeth's note below is self-explanatory. Please update the attached fact sheets, let's say by COB the 23rd so Lee has a chance to review before the 7/24 deadline. I would add to the direction to identify and prepare and new factsheets on emerging topics (perhaps 404c; not sure we've done one recently) that may be necessary as well.

As an FYA, these may have been prepared through your budget folks previously as RMS, I believe, ran the original drill which produced these factsheets. So, please keep your folks in the loop. Much appreciated.

Ann Campbell
Chief of Staff (acting)
Office of Water

From: Skane, Elizabeth
Sent: Wednesday, July 18, 2018 3:14 PM
To: Campbell, Ann <Campbell.Ann@epa.gov>
Cc: Klasen, Matthew <Klasen.Matthew@epa.gov>; Borum, Denis <Borum.Denis@epa.gov>; Kaiser, Sven-Erik <Kaiser.Sven-Erik@epa.gov>
Subject: Action: Update OW Fact Sheets for Administrator hearing by 2p 7/24

Hi Ann, welcome back! Hope you had a lovely break.

Lest you feel overly relaxed as a lingering effect of your vacation, we have learned the Administrator will likely testify before
Senate EPW on 8/1 or 8/2 on his priorities. OCIR would like to provide him with an updated briefing book. To that end we are requesting an update to the OW fact sheets NLT 2pm Tuesday July 24.

I've attached what we believe to be the universe of OW fact sheets; our team will go through the rest to make sure the set is complete but we wanted to get these out to you ASAP.

OW Fact Sheets.zip

Many thanks and again, welcome back!
Elizabeth

Elizabeth Skane ◆ 202.564.5696
US Environmental Protection Agency
Office of Congressional Affairs
WJC North 3443S

Message

From: Aubee, Catherine [Aubee.Catherine@epa.gov]
Sent: 7/23/2018 3:42:00 PM
To: Strong, Jamie [Strong.Jamie@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Henry, Tala [Henry.Tala@epa.gov]; Benson, Amy [Benson.Amy@epa.gov]; Brinkerhoff, Chris [Brinkerhoff.Chris@epa.gov]; Babcock, Amy [babcock.amy@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]
Subject: RE: OST and RAD GenX Assessment Check In

Hi Jamie, thanks for letting us know. I will call in. Will need to sign off a few minutes early for a 12:30PM mtg.

Best,
Catherine

From: Strong, Jamie
Sent: Monday, July 23, 2018 11:41 AM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>; Henry, Tala <Henry.Tala@epa.gov>; Aubee, Catherine <Aubee.Catherine@epa.gov>; Benson, Amy <Benson.Amy@epa.gov>; Brinkerhoff, Chris <Brinkerhoff.Chris@epa.gov>; Babcock, Amy <babcock.amy@epa.gov>; Behl, Betsy <Behl.Betsy@epa.gov>; Miller, Gregory <Miller.Gregory@epa.gov>; Donohue, Joyce <Donohue.Joyce@epa.gov>
Subject: RE: OST and RAD GenX Assessment Check In

Hi everyone,
Tomorrow's meeting is on. Betsy and I will be offsite at a management retreat, but Brittany and Greg will provide an update on the peer review.

Thanks,
Jamie

-----Original Appointment-----
From: Jacobs, Brittany
Sent: Monday, February 12, 2018 4:33 PM
To: Jacobs, Brittany; Behrsing, Tracy; Henry, Tala; Aubee, Catherine; Benson, Amy; Brinkerhoff, Chris; Babcock, Amy; Behl, Betsy; Strong, Jamie; Miller, Gregory; Donohue, Joyce
Subject: OST and RAD GenX Assessment Check In
When: Tuesday, July 24, 2018 12:00 PM-12:30 PM (UTC-05:00) Eastern Time (US & Canada).
Where: DCRoomWest5231L/DC-CCW-OST

Updated 2/15 with call in number

Conference phone number:
Conference ID:

Ex. 6 Personal Privacy (PP)

For OST and RAD to touch base about the GenX assessment. Scheduled through July. Hopefully we will just need the half hour, but I can extend out if needed.

This was the most available time according to the Doodle Poll sent out.

Message

From: Strong, Jamie [Strong.Jamie@epa.gov]
Sent: 7/30/2018 1:57:29 PM
To: Jacobs, Brittany [jacobs.brittany@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]
Subject: RE: GenX Assessment Check In

Let's use this time to map out presentation to IA group. Also give update on doc revisions and response to comment. Id like to be able to send these to Betsy before I leave (last day in office is the 9th).

-----Original Appointment-----
From: Jacobs, Brittany
Sent: Thursday, February 08, 2018 11:11 AM
To: Jacobs, Brittany; Donohue, Joyce; Strong, Jamie; Miller, Gregory
Subject: GenX Assessment Check In
When: Tuesday, July 31, 2018 2:00 PM-3:00 PM (UTC-05:00) Eastern Time (US & Canada).
Where: DCRoomWest-5231AA/DC-CCW-OST

Message

From: Holsinger, Hannah [Holsinger.Hannah@epa.gov]
Sent: 8/21/2018 1:54:30 PM
To: Grevatt, Peter [Grevatt.Peter@epa.gov]; patricia.m.underwood.civ@mail.mil; maria.vargas@navy.mil; wanda.holmes@navy.mil; freeman.holifield.mil@mail.mil; andrew.rak@noblis.org; andrew.rak2.ctr@mail.mil; mark.s.johnson.civ@mail.mil; jennifer.corack@navy.mil; Anita.K.Meyer@usace.army.mil; james.s.smith454.civ@mail.mil; barry.marcel@us.af.mil; Sandra Howard [Sandra.Howard@HHS.GOV]; Suzanne_Fitzpatrick [Suzanne.Fitzpatrick@fda.hhs.gov]; Jason.Aungst@fda.hhs.gov; Penelope.Rice@fda.hhs.gov; Paul.South@fda.hhs.gov; wic1@cdc.gov; txf5@cdc.gov; pjb7@cdc.gov; Christopher.Weis@nih.gov; miller.aubrey@nih.gov; suzanne.fenton@nih.gov; michael.devito@nih.gov; birnbaumls@niehs.nih.gov; fjh1@cdc.gov; seg3@cdc.gov; eaw0@cdc.gov; iwa6@cdc.gov; oii2@cdc.gov; pxp5@cdc.gov; linda.s.wennerberg@nasa.gov; James_H_Kim Ex. 6 Personal Privacy (PP); mfocazio@usgs.gov; Terra.irons@va.gov; Mclain, Jennifer [Mclain.Jennifer@epa.gov]; Wadlington, Christina [Wadlington.Christina@epa.gov]; Tiago, Joseph [Tiago.Joseph@epa.gov]; Burneson, Eric [Burneson.Eric@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Harper, Ashley [harper.ashley@epa.gov]; Drinkard, Andrea [Drinkard.Andrea@epa.gov]; Babcock, Amy [babcock.amy@epa.gov]; Aubee, Catherine [Aubee.Catherine@epa.gov]; Henry, Tala [Henry.Tala@epa.gov]; Orme-Zavaleta, Jennifer [Orme-Zavaleta.Jennifer@epa.gov]; Gillespie, Andrew [Gillespie.Andrew@epa.gov]; Bahadori, Tina [Bahadori.Tina@epa.gov]; Jones, Samantha [Jones.Samantha@epa.gov]; Lambert, Jason [Lambert.Jason@epa.gov]; Lavoie, Emma [Lavoie.Emma@epa.gov]; Owens, Beth [Owens.Beth@epa.gov]; Moore, Alexa [moore.alexa@epa.gov]; Champlin, Anna [Champlin.Anna@epa.gov]; Rodan, Bruce [rodan.bruce@epa.gov]; Mattas-Curry, Lahne [Mattas-Curry.Lahne@epa.gov]; Raffaele, Kathleen [raffaele.kathleen@epa.gov]; Gervais, Gregory [Gervais.Gregory@epa.gov]; Leonard, Paul [leonard.paul@epa.gov]; Foster, Stiven [Foster.Stiven@epa.gov]; Libelo, Laurence [Libelo.Laurence@epa.gov]; Soares, Barbara [soares.barbara@epa.gov]; Lehman, Rachel [lehman.rachel@epa.gov]; Albert, Ryan [Albert.Ryan@epa.gov]; Murphy, Elizabeth [Murphy.Elizabeth@epa.gov]; Lan, Alexis [lan.alexis@epa.gov]
Subject: RE: PFAS Toxicity Assessment Discussion-Federal
Attachments: Peer Review Report_Task 0008_GenX_Final_7-25-18.pdf; Peer Review Report_Task 0008_PFBS_Final.pdf; PFAS stakeholder briefing_PFBS and GenX Chemicals_8-27-18_Final.pptx

Good morning,
Please find meeting materials attached for Monday's discussion.

Also here is the adobe connect link for the meeting: **Ex. 6 Personal Privacy (PP)**
Thank you,
Hannah

-----Original Appointment-----
From: Grevatt, Peter
Sent: Thursday, August 2, 2018 10:22 AM
To: Grevatt, Peter; patricia.m.underwood.civ@mail.mil; maria.vargas@navy.mil; wanda.holmes@navy.mil; freeman.holifield.mil@mail.mil; andrew.rak@noblis.org; andrew.rak2.ctr@mail.mil; mark.s.johnson.civ@mail.mil; jennifer.corack@navy.mil; Anita.K.Meyer@usace.army.mil; james.s.smith454.civ@mail.mil; barry.marcel@us.af.mil; Sandra Howard; Suzanne_Fitzpatrick; Jason.Aungst@fda.hhs.gov; Penelope.Rice@fda.hhs.gov; Paul.South@fda.hhs.gov; wic1@cdc.gov; txf5@cdc.gov; pjb7@cdc.gov; Christopher.Weis@nih.gov; miller.aubrey@nih.gov; suzanne.fenton@nih.gov; michael.devito@nih.gov; birnbaumls@niehs.nih.gov; fjh1@cdc.gov; seg3@cdc.gov; eaw0@cdc.gov; iwa6@cdc.gov; oii2@cdc.gov; pxp5@cdc.gov; linda.s.wennerberg@nasa.gov; James_H_Kim@ Ex. 6 Personal Privacy (PP); mfocazio@usgs.gov; Terra.irons@va.gov; Mclain, Jennifer; Holsinger, Hannah; Wadlington, Christina; Tiago, Joseph; Burneson, Eric; Behl, Betsy; Strong, Jamie; Jacobs, Brittany; Donohue, Joyce; Miller, Gregory; Harper, Ashley; Drinkard, Andrea; Babcock, Amy; Aubee, Catherine; Henry, Tala; Orme-Zavaleta, Jennifer; Gillespie, Andrew; Bahadori, Tina; Jones, Samantha; Lambert, Jason; Lavoie, Emma; Owens, Beth; Moore, Alexa; Champlin, Anna; Rodan, Bruce; Mattas-Curry, Lahne; Raffaele, Kathleen; Gervais, Gregory; Leonard, Paul; Foster, Stiven; Libelo, Laurence; Soares, Barbara; Lehman, Rachel; Albert, Ryan; Murphy, Elizabeth; Lan, Alexis

Subject: PFAS Toxicity Assessment Discussion-Federal
When: Monday, August 27, 2018 9:00 AM-10:30 AM (UTC-05:00) Eastern Time (US & Canada).
Where: DCRoomEast2123/DC-ICC-OW-OGWDW - Ex. 6 Personal Privacy (PP)

Meeting materials will be provided prior to the meeting.

Appointment

From: Tiago, Joseph [Tiago.Joseph@epa.gov]
Sent: 8/27/2018 12:50:13 PM
To: patricia.m.underwood.civ@mail.mil; maria.vargas@navy.mil; wanda.holmes@navy.mil; freeman.holifield.mil@mail.mil; andrew.rak@noblis.org; andrew.rak2.ctr@mail.mil; mark.s.johnson.civ@mail.mil; jennifer.corack@navy.mil; Anita.K.Meyer@usace.army.mil; james.s.smith454.civ@mail.mil; barry.marcel@us.af.mil; Sandra Howard [Sandra.Howard@HHS.GOV]; Suzanne_Fitzpatrick [Suzanne.Fitzpatrick@fda.hhs.gov]; Jason.Aungst@fda.hhs.gov; Penelope.Rice@fda.hhs.gov; Paul.South@fda.hhs.gov; wic1@cdc.gov; txf5@cdc.gov; pjb7@cdc.gov; Christopher.Weis@nih.gov; miller.aubrey@nih.gov; suzanne.fenton@nih.gov; michael.devito@nih.gov; birnbaumls@niehs.nih.gov; fjh1@cdc.gov; seg3@cdc.gov; eaw0@cdc.gov; iwa6@cdc.gov; oii2@cdc.gov; pxp5@cdc.gov; linda.s.wennerberg@nasa.gov; James_H_Kim@ Ex. 6 Personal Privacy (PP) ; mfocazio@usgs.gov; Terra.irons@va.gov; Grevatt, Peter [Grevatt.Peter@epa.gov]; Mclain, Jennifer [Mclain.Jennifer@epa.gov]; Holsinger, Hannah [Holsinger.Hannah@epa.gov]; Wadlington, Christina [Wadlington.Christina@epa.gov]; Tiago, Joseph [Tiago.Joseph@epa.gov]; Burneson, Eric [Burneson.Eric@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Harper, Ashley [harper.ashley@epa.gov]; Drinkard, Andrea [Drinkard.Andrea@epa.gov]; Babcock, Amy [babcock.amy@epa.gov]; Aubee, Catherine [Aubee.Catherine@epa.gov]; Henry, Tala [Henry.Tala@epa.gov]; Orme-Zavaleta, Jennifer [Orme-Zavaleta.Jennifer@epa.gov]; Gillespie, Andrew [Gillespie.Andrew@epa.gov]; Bahadori, Tina [Bahadori.Tina@epa.gov]; Jones, Samantha [Jones.Samantha@epa.gov]; Lambert, Jason [Lambert.Jason@epa.gov]; Lavoie, Emma [Lavoie.Emma@epa.gov]; Owens, Beth [Owens.Beth@epa.gov]; Moore, Alexa [moore.alexa@epa.gov]; Champlin, Anna [Champlin.Anna@epa.gov]; Rodan, Bruce [rodan.bruce@epa.gov]; Mattas-Curry, Lahne [Mattas-Curry.Lahne@epa.gov]; Raffaele, Kathleen [raffaele.kathleen@epa.gov]; Gervais, Gregory [Gervais.Gregory@epa.gov]; Leonard, Paul [leonard.paul@epa.gov]; Foster, Stiven [Foster.Stiven@epa.gov]; Libelo, Laurence [Libelo.Laurence@epa.gov]; Soares, Barbara [soares.barbara@epa.gov]; Lehman, Rachel [lehman.rachel@epa.gov]; Albert, Ryan [Albert.Ryan@epa.gov]; Murphy, Elizabeth [Murphy.Elizabeth@epa.gov]; Lan, Alexis [lan.alexis@epa.gov]
CC: Burchette, John [Burchette.John@epa.gov]; Baier-Anderson, Caroline [Baier-Anderson.Caroline@epa.gov]; Cooke, Maryt [Cooke.Maryt@epa.gov]; Birchfield, Norman [Birchfield.Norman@epa.gov]; Moore, Beth [Beth.Moore@em.doe.gov]; Putzrath, Resha M CIV USN NAVMCPUBHLTHCEN PORS (US) [resha.m.putzrath.civ@mail.mil]; Margo_Schwab Ex. 6 Personal Privacy (PP) ; Speth, Thomas Ex. 6 Personal Privacy (PP) ; Vlad Dorjets Ex. 6 Personal Privacy (PP) Jones, Danielle Y. EOP/OMB Ex. 6 Personal Privacy (PP) ; Barringer, Jody M. EOP/OMB Ex. 6 Personal Privacy (PP) Christopher D. EOP/OMB [Ex. 6 Personal Privacy (PP)

Subject: PFAS Toxicity Assessment Discussion-Federal
Attachments: Peer Review Report_Task 0008_GenX_Final_7-25-18.pdf; Peer Review Report_Task 0008_PFBS_Final.pdf; PFAS stakeholder briefing_PFBS and GenX Chemicals_8-27-18_Final.pptx
Location: DCRoomEast2123/DC-ICC-OW-OGWDW - Ex. 6 Personal Privacy (PP)

Start: 8/27/2018 1:00:00 PM
End: 8/27/2018 2:30:00 PM
Show Time As: Tentative

Required Attendees: patricia.m.underwood.civ@mail.mil; maria.vargas@navy.mil; wanda.holmes@navy.mil; freeman.holifield.mil@mail.mil; andrew.rak@noblis.org; andrew.rak2.ctr@mail.mil; mark.s.johnson.civ@mail.mil; jennifer.corack@navy.mil; Anita.K.Meyer@usace.army.mil; james.s.smith454.civ@mail.mil; barry.marcel@us.af.mil; Sandra.Howard@hhs.gov; Suzanne_Fitzpatrick; Jason.Aungst@fda.hhs.gov; Penelope.Rice@fda.hhs.gov; Paul.South@fda.hhs.gov; wic1@cdc.gov; txf5@cdc.gov; pjb7@cdc.gov; Christopher.Weis@nih.gov; miller.aubrey@nih.gov; suzanne.fenton@nih.gov; michael.devito@nih.gov; birnbaumls@niehs.nih.gov; fjh1@cdc.gov; seg3@cdc.gov; eaw0@cdc.gov; iwa6@cdc.gov; oii2@cdc.gov; pxp5@cdc.gov; linda.s.wennerberg@nasa.gov; James_H_Kim Ex. 6 Personal Privacy (PP) ; mfocazio@usgs.gov; Terra.irons@va.gov; Grevatt, Peter; Mclain, Jennifer; Holsinger, Hannah; Wadlington, Christina; Tiago, Joseph; Burneson, Eric; Behl, Betsy; Strong, Jamie; Jacobs, Brittany; Donohue, Joyce; Miller, Gregory; Harper, Ashley; Drinkard, Andrea; Babcock, Amy; Aubee, Catherine; Henry, Tala; Orme-Zavaleta, Jennifer; Gillespie, Andrew; Bahadori, Tina; Jones, Samantha; Lambert, Jason;

Lavoie, Emma; Owens, Beth; Moore, Alexa; Champlin, Anna; Rodan, Bruce; Mattas-Curry, Lahne; Raffaele, Kathleen; Gervais, Gregory; Leonard, Paul; Foster, Stiven; Libelo, Laurence; Soares, Barbara; Lehman, Rachel; Albert, Ryan; Murphy, Elizabeth; Lan, Alexis

Optional Attendees: Burchette, John; Baier-Anderson, Caroline; Cooke, Maryt; Birchfield, Norman; Moore, Beth; Putzrath, Resha M CIV USN NAVMCPUBHLTHCEN PORS (US); Margo_Schwab(Ex. 6 Personal Privacy (PP) y; Speth, Thomas; Vlad Dorjets Ex. 6 Personal Privacy (PP) v); Jones, Danielle Y. EOP/OMB; Barringer, Jody M. EOP/OMB; Gamache, Christopher D. EOP/OMB

Adobe Connect: Ex. 6 Personal Privacy (PP)

Message

From: Holsinger, Hannah [Holsinger.Hannah@epa.gov]
Sent: 9/10/2018 4:30:22 PM
To: Grevatt, Peter [Grevatt.Peter@epa.gov]; patricia.m.underwood.civ@mail.mil; maria.vargas@navy.mil; wanda.holmes@navy.mil; freeman.holifield.mil@mail.mil; andrew.rak@noblis.org; andrew.rak2.ctr@mail.mil; mark.s.johnson.civ@mail.mil; jennifer.corack@navy.mil; Anita.K.Meyer@usace.army.mil; james.s.smith454.civ@mail.mil; barry.marcel@us.af.mil; resha.m.putzrath.civ@mail.mil; Sandra Howard [Sandra.Howard@HHS.GOV]; Suzanne_Fitzpatrick [Suzanne.Fitzpatrick@fda.hhs.gov]; Jason.Aungst@fda.hhs.gov; Penelope.Rice@fda.hhs.gov; Paul.South@fda.hhs.gov; wic1@cdc.gov; txf5@cdc.gov; pjb7@cdc.gov; Christopher.Weis@nih.gov; miller.aubrey@nih.gov; suzanne.fenton@nih.gov; michael.devito@nih.gov; Linda Birnbaum [birnbaumls@niehs.nih.gov]; fjh1@cdc.gov; seg3@cdc.gov; eaw0@cdc.gov; iwa6@cdc.gov; oii2@cdc.gov; pxp5@cdc.gov; linda.s.wennerberg@nasa.gov; Margo_Schwab Ex. 6 Personal Privacy (PP) Vladik_Dorjets@ Ex. 6 Personal Privacy (PP) Danielle_Y_Jones@ Ex. 6 Personal Privacy (PP) Jody_M._Barringer Ex. 6 Personal Privacy (PP) v; Christopher_D_Gamache Ex. 6 Personal Privacy (PP) mfocazio@usgs.gov; Terra.irons@va.gov; Beth.moore@em.doe.gov; Mclain, Jennifer [Mclain.Jennifer@epa.gov]; Wadlington, Christina [Wadlington.Christina@epa.gov]; Tiago, Joseph [Tiago.Joseph@epa.gov]; Burneson, Eric [Burneson.Eric@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Harper, Ashley [harper.ashley@epa.gov]; Drinkard, Andrea [Drinkard.Andrea@epa.gov]; Behrsing, Tracy; Babcock, Amy [babcock.amy@epa.gov]; Aubee, Catherine [Aubee.Catherine@epa.gov]; Henry, Tala [Henry.Tala@epa.gov]; Orme-Zavaleta, Jennifer [Orme-Zavaleta.Jennifer@epa.gov]; Gillespie, Andrew [Gillespie.Andrew@epa.gov]; Bahadori, Tina [Bahadori.Tina@epa.gov]; Jones, Samantha [Jones.Samantha@epa.gov]; Lambert, Jason [Lambert.Jason@epa.gov]; Lavoie, Emma [Lavoie.Emma@epa.gov]; Owens, Beth [Owens.Beth@epa.gov]; Moore, Alexa [moore.alexa@epa.gov]; Champlin, Anna [Champlin.Anna@epa.gov]; Rodan, Bruce [rodan.bruce@epa.gov]; Mattas-Curry, Lahne [Mattas-Curry.Lahne@epa.gov]; Raffaele, Kathleen [raffaele.kathleen@epa.gov]; Gervais, Gregory [Gervais.Gregory@epa.gov]; Leonard, Paul [leonard.paul@epa.gov]; Foster, Stiven [Foster.Stiven@epa.gov]; Libelo, Laurence [Libelo.Laurence@epa.gov]; Soares, Barbara [soares.barbara@epa.gov]; Lehman, Rachel [lehman.rachel@epa.gov]; Murphy, Elizabeth [Murphy.Elizabeth@epa.gov]; Lan, Alexis [lan.alexis@epa.gov]; Albert, Ryan [Albert.Ryan@epa.gov]
Subject: RE: PFAS Toxicity Assessment Discussion-Federal
Attachments: PUBLIC COMMENT DRAFT Human Health Tox Values for GenX Chemicals_09_10_2018 REDLINE.PDF

Good Afternoon,
Apologies to folks receiving this twice but I received undeliverable notices based on file size. To ensure everyone receives the attachments I am resending each file separately.

Please find attached redline versions of the GenX toxicity assessment to assist with Thursday's discussion.

Thank you,
Hannah

-----Original Appointment-----
From: Grevatt, Peter
Sent: Thursday, September 6, 2018 5:38 PM
To: Grevatt, Peter; patricia.m.underwood.civ@mail.mil; maria.vargas@navy.mil; wanda.holmes@navy.mil; freeman.holifield.mil@mail.mil; andrew.rak@noblis.org; andrew.rak2.ctr@mail.mil; mark.s.johnson.civ@mail.mil; jennifer.corack@navy.mil; Anita.K.Meyer@usace.army.mil; james.s.smith454.civ@mail.mil; barry.marcel@us.af.mil; resha.m.putzrath.civ@mail.mil; Sandra Howard; Suzanne_Fitzpatrick; Jason.Aungst@fda.hhs.gov; Penelope.Rice@fda.hhs.gov; Paul.South@fda.hhs.gov; wic1@cdc.gov; txf5@cdc.gov; pjb7@cdc.gov; Christopher.Weis@nih.gov; miller.aubrey@nih.gov; suzanne.fenton@nih.gov; michael.devito@nih.gov; Linda Birnbaum; fjh1@cdc.gov; seg3@cdc.gov; eaw0@cdc.gov; iwa6@cdc.gov; oii2@cdc.gov; pxp5@cdc.gov; linda.s.wennerberg@nasa.gov; Margo_Schwab Ex. 6 Personal Privacy (PP) Vladik_Dorjets@ Ex. 6 Personal Privacy (PP) Danielle_Y_Jones Ex. 6 Personal Privacy (PP) Jody_M._Barringer Ex. 6 Personal Privacy (PP) Christopher_D_Gamache@ Ex. 6 Personal Privacy (PP)

mfocazio@usgs.gov; Terra.irons@va.gov; Beth.moore@em.doe.gov; Mclain, Jennifer; Holsinger, Hannah; Wadlington, Christina; Tiago, Joseph; Burneson, Eric; Behl, Betsy; Strong, Jamie; Jacobs, Brittany; Donohue, Joyce; Miller, Gregory; Harper, Ashley; Drinkard, Andrea; Behrsing, Tracy; Babcock, Amy; Aubee, Catherine; Henry, Tala; Orme-Zavaleta, Jennifer; Gillespie, Andrew; Bahadori, Tina; Jones, Samantha; Lambert, Jason; Lavoie, Emma; Owens, Beth; Moore, Alexa; Champlin, Anna; Rodan, Bruce; Mattas-Curry, Lahne; Raffaele, Kathleen; Gervais, Gregory; Leonard, Paul; Foster, Stiven; Libelo, Laurence; Soares, Barbara; Lehman, Rachel; Murphy, Elizabeth; Lan, Alexis; Albert, Ryan
Subject: PFAS Toxicity Assessment Discussion-Federal
When: Thursday, September 13, 2018 9:00 AM-10:30 AM (UTC-05:00) Eastern Time (US & Canada).
Where: EPA WJC East 2123 - Call In Number: 2 Ex. 6 Personal Privacy (PP)

Appointment

From: Grevatt, Peter [Grevatt.Peter@epa.gov]
Sent: 9/13/2018 11:29:58 AM
To: patricia.m.underwood.civ@mail.mil; maria.vargas@navy.mil; wanda.holmes@navy.mil; freeman.holifield.mil@mail.mil; andrew.rak@noblis.org; andrew.rak2.ctr@mail.mil; mark.s.johnson.civ@mail.mil; jennifer.corack@navy.mil; Anita.K.Meyer@usace.army.mil; james.s.smith454.civ@mail.mil; barry.marcel@us.af.mil; resha.m.putzrath.civ@mail.mil; Sandra Howard [Sandra.Howard@HHS.GOV]; Suzanne_Fitzpatrick [Suzanne.Fitzpatrick@fda.hhs.gov]; Jason.Aungst@fda.hhs.gov; Penelope.Rice@fda.hhs.gov; Paul.South@fda.hhs.gov; wic1@cdc.gov; txf5@cdc.gov; pjb7@cdc.gov; Christopher.Weis@nih.gov; miller.aubrey@nih.gov; suzanne.fenton@nih.gov; michael.devito@nih.gov; Linda Birnbaum [birnbaumls@niehs.nih.gov]; fjh1@cdc.gov; seg3@cdc.gov; eaw0@cdc.gov; iwa6@cdc.gov; oii2@cdc.gov; pxp5@cdc.gov; linda.s.wennerberg@nasa.gov; Margo_Schwab[Ex. 6 Personal Privacy (PP)] Vladik_Dorjets[Ex. 6 Personal Privacy (PP)] Danielle_Y_Jones[Ex. 6 Personal Privacy (PP)]; Jody_M._Barringer@[Ex. 6 Personal Privacy (PP)] Christopher_D_Gamache@[Ex. 6 Personal Privacy (PP)] mfocazio@usgs.gov; Terra.irons@va.gov; Beth.moore@em.doe.gov; Mclain, Jennifer [Mclain.Jennifer@epa.gov]; Holsinger, Hannah [Holsinger.Hannah@epa.gov]; Wadlington, Christina [Wadlington.Christina@epa.gov]; Tiago, Joseph [Tiago.Joseph@epa.gov]; Burneson, Eric [Burneson.Eric@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Harper, Ashley [harper.ashley@epa.gov]; Drinkard, Andrea [Drinkard.Andrea@epa.gov]; Behrsing, Tracy; Babcock, Amy [babcock.amy@epa.gov]; Aubee, Catherine [Aubee.Catherine@epa.gov]; Henry, Tala [Henry.Tala@epa.gov]; Orme-Zavaleta, Jennifer [Orme-Zavaleta.Jennifer@epa.gov]; Gillespie, Andrew [Gillespie.Andrew@epa.gov]; Bahadori, Tina [Bahadori.Tina@epa.gov]; Jones, Samantha [Jones.Samantha@epa.gov]; Lambert, Jason [Lambert.Jason@epa.gov]; Lavoie, Emma [Lavoie.Emma@epa.gov]; Owens, Beth [Owens.Beth@epa.gov]; Moore, Alexa [moore.alexa@epa.gov]; Champlin, Anna [Champlin.Anna@epa.gov]; Rodan, Bruce [rodan.bruce@epa.gov]; Mattas-Curry, Lahne [Mattas-Curry.Lahne@epa.gov]; Raffaele, Kathleen [raffaele.kathleen@epa.gov]; Gervais, Gregory [Gervais.Gregory@epa.gov]; Leonard, Paul [leonard.paul@epa.gov]; Foster, Stiven [Foster.Stiven@epa.gov]; Libelo, Laurence [Libelo.Laurence@epa.gov]; Soares, Barbara [soares.barbara@epa.gov]; Lehman, Rachel [lehman.rachel@epa.gov]; Murphy, Elizabeth [Murphy.Elizabeth@epa.gov]; Lan, Alexis [lan.alexis@epa.gov]; Albert, Ryan [Albert.Ryan@epa.gov]
CC: Underwood, Patricia CIV (US) [patricia.underwood6.civ@mail.mil]; Thayer, Kris [thayer.kris@epa.gov]; hga0@cdc.gov; cjc3@cdc.gov; masten@niehs.nih.gov

Subject: PFAS Toxicity Assessment Discussion-Federal
Attachments: PFBS_Public Comment Draft_REDLINE for Federal Agencies_9-10-18.pdf; PUBLIC COMMENT DRAFT Human Health Tox Values for GenX Chemicals_09_10_2018 REDLINE.pdf
Location: EPA WJC East 2123 - Call In Number: **Ex. 6 Personal Privacy (PP)**

Start: 9/13/2018 1:00:00 PM
End: 9/13/2018 2:30:00 PM
Show Time As: Tentative

Required Attendees: patricia.m.underwood.civ@mail.mil; maria.vargas@navy.mil; wanda.holmes@navy.mil; freeman.holifield.mil@mail.mil; andrew.rak@noblis.org; andrew.rak2.ctr@mail.mil; mark.s.johnson.civ@mail.mil; jennifer.corack@navy.mil; Anita.K.Meyer@usace.army.mil; james.s.smith454.civ@mail.mil; barry.marcel@us.af.mil; resha.m.putzrath.civ@mail.mil; Sandra.Howard@hhs.gov; Suzanne_Fitzpatrick; Jason.Aungst@fda.hhs.gov; Penelope.Rice@fda.hhs.gov; Paul.South@fda.hhs.gov; wic1@cdc.gov; txf5@cdc.gov; pjb7@cdc.gov; Christopher.Weis@nih.gov; miller.aubrey@nih.gov; suzanne.fenton@nih.gov; michael.devito@nih.gov; birnbaumls@niehs.nih.gov; fjh1@cdc.gov; seg3@cdc.gov; eaw0@cdc.gov; iwa6@cdc.gov; oii2@cdc.gov; pxp5@cdc.gov; linda.s.wennerberg@nasa.gov; Margo_Schwab[Ex. 6 Personal Privacy (PP)]; Vladik_Dorjets@[Ex. 6 Personal Privacy (PP)] Danielle_Y_Jones[Ex. 6 Personal Privacy (PP)]v; Jody_M._Barringer@[Ex. 6 Personal Privacy (PP)]; Christopher_D_Gamache@[Ex. 6 Personal Privacy (PP)] mfocazio@usgs.gov; Terra.irons@va.gov; Beth.moore@em.doe.gov; Mclain, Jennifer; Holsinger, Hannah; Wadlington, Christina; Tiago, Joseph; Burneson, Eric; Behl, Betsy; Strong, Jamie; Jacobs, Brittany; Donohue, Joyce; Miller, Gregory; Harper, Ashley; Drinkard, Andrea; Behrsing, Tracy; Babcock, Amy; Aubee, Catherine; Henry, Tala; Orme-Zavaleta, Jennifer; Gillespie, Andrew; Bahadori, Tina; Jones, Samantha; Lambert, Jason; Lavoie, Emma; Owens, Beth; Moore, Alexa; Champlin, Anna; Rodan, Bruce; Mattas-Curry, Lahne; Raffaele, Kathleen; Gervais, Gregory;

Leonard, Paul; Foster, Stiven; Libelo, Laurence; Soares, Barbara; Lehman, Rachel; Murphy, Elizabeth; Lan, Alexis; Albert, Ryan

Optional Attendees: Underwood, Patricia CIV (US); Thayer, Kris; hga0@cdc.gov; cjc3@cdc.gov; masten@niehs.nih.gov

Agenda:

1) Brief review of process to date
2) Discussion of text in two draft documents related to impacts on the thyroid
3) Identification and discussion of other topics of primary interest to federal partners
4) Next steps related to messaging and posting of documents for public review and comment

Message

From: Strong, Jamie [Strong.Jamie@epa.gov]
Sent: 9/17/2018 5:42:29 PM
To: Albert, Ryan [Albert.Ryan@epa.gov]; Holsinger, Hannah [Holsinger.Hannah@epa.gov]; Bass, Nikki [Bass.Nikki@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]
Subject: RE: PFAS Coordination OGWDW and OST

Sorry all, I need to spend this afternoon reviewing comms for the GenX PFBS roll out.

-----Original Appointment-----
From: Strong, Jamie
Sent: Wednesday, June 20, 2018 11:46 AM
To: Albert, Ryan; Strong, Jamie; Holsinger, Hannah; Bass, Nikki; Jacobs, Brittany; Miller, Gregory; Donohue, Joyce
Subject: PFAS Coordination OGWDW and OST
When: Monday, September 17, 2018 2:00 PM-3:00 PM (UTC-05:00) Eastern Time (US & Canada).
Where: DCRoomWest5231M/DC-CCW-OST

Setting up regular meetings to discuss ongoing work on PFAS in OGWDW and OST.

Message

From: Strong, Jamie [Strong.Jamie@epa.gov]
Sent: 10/30/2018 11:57:41 AM
To: Miller, Gregory [Miller.Gregory@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]
CC: Donohue, Joyce [Donohue.Joyce@epa.gov]
Subject: FW: HFPO tetramer tox

From: Libelo, Laurence
Sent: Tuesday, October 30, 2018 7:56 AM
To: Strong, Jamie <Strong.Jamie@epa.gov>; Behl, Betsy <Behl.Betsy@epa.gov>
Subject: HFPO tetramer tox

I expect you have seen this but FYI-

https://www.ncbi.nlm.nih.gov/m/pubmed/28864880/

Cytotoxicity of novel fluorinated alternatives to long-chain perfluoroalkyl substances to human liver cell line and their binding capacity to human liver fatty acid binding protein.

Although shorter chain homologues and other types of fluorinated chemicals are currently used as alternatives to long-chain perfluoroalkyl substances (PFASs), their safety information remains unclear and urgently needed. Here, the cytotoxicity of several fluorinated alternatives (i.e., 6:2 fluorotelomer carboxylic acid (6:2 FTCA), 6:2 fluorotelomer sulfonic acid (6:2 FTSA), 6:2 chlorinated polyfluorinated ether sulfonate (6:2 Cl-PFESA), and hexafluoropropylene oxide (HFPO) homologues) to human liver HL-7702 cell line were measured and compared with perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS). Their binding mode and affinity to human liver fatty acid binding protein (hL-FABP) were also determined. Compared with PFOA and PFOS, 6:2 Cl-PFESA, HFPO trimer acid (HFPO-TA), HFPO tetramer acid (HFPO-TeA), and 6:2 FTSA showed greater toxic effects on cell viabilities. At low exposure doses, these alternatives induced cell proliferation with similar mechanism which was different from that of PFOA and PFOS. Furthermore, binding affinity to hL-FABP decreased in the order of 6:2 FTCA < 6:2 FTSA < HFPO dimer acid (HFPO-DA) < PFOA < PFOS/6:2 Cl-PFESA/HFPO-TA. Due to their distinctive structure, 6:2 Cl-PFESA and HFPO homologues were bound to the hL-FABP inner pocket with unique binding modes and higher binding energy compared with PFOA and PFOS. This research enhances our understanding of the toxicity of PFAS alternatives during usage and provides useful evidence for the development of new alternatives.

Sent from my iPhone

Message

From: Grevatt, Peter [Grevatt.Peter@epa.gov]
Sent: 11/13/2018 7:28:47 PM
To: patricia.m.underwood.civ@mail.mil; maria.vargas@navy.mil; wanda.holmes@navy.mil; freeman.holifield.mil@mail.mil; andrew.rak@noblis.org; andrew.rak2.ctr@mail.mil; mark.s.johnson.civ@mail.mil; jennifer.corack@navy.mil; Anita.K.Meyer@usace.army.mil; james.s.smith454.civ@mail.mil; barry.marcel@us.af.mil; resha.m.putzrath.civ@mail.mil; Sandra Howard [Sandra.Howard@HHS.GOV]; Suzanne_Fitzpatrick [Suzanne.Fitzpatrick@fda.hhs.gov]; Jason.Aungst@fda.hhs.gov; Penelope.Rice@fda.hhs.gov; Paul.South@fda.hhs.gov; wic1@cdc.gov; txf5@cdc.gov; pjb7@cdc.gov; Christopher.Weis@nih.gov; miller.aubrey@nih.gov; suzanne.fenton@nih.gov; michael.devito@nih.gov; Linda Birnbaum [birnbaumls@niehs.nih.gov]; fjh1@cdc.gov; seg3@cdc.gov; eaw0@cdc.gov; iwa6@cdc.gov; oii2@cdc.gov; pxp5@cdc.gov; linda.s.wennerberg@nasa.gov; Margo_Schwab@[redacted]; Vladik_Dorjet[redacted] Danielle_Y_Jones[redacted]; Jody_M._Barringer@[redacted]; Christopher_D_Gamache@[redacted] mfocazio@usgs.gov; Terra.irons@va.gov; Beth.moore@em.doe.gov; Mclain, Jennifer [Mclain.Jennifer@epa.gov]; Holsinger, Hannah [Holsinger.Hannah@epa.gov]; Wadlington, Christina [Wadlington.Christina@epa.gov]; Tiago, Joseph [Tiago.Joseph@epa.gov]; Burneson, Eric [Burneson.Eric@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Harper, Ashley [harper.ashley@epa.gov]; Drinkard, Andrea [Drinkard.Andrea@epa.gov]; Behrsing, Tracy; Babcock, Amy [babcock.amy@epa.gov]; Aubee, Catherine [Aubee.Catherine@epa.gov]; Henry, Tala [Henry.Tala@epa.gov]; Orme-Zavaleta, Jennifer [Orme-Zavaleta.Jennifer@epa.gov]; Gillespie, Andrew [Gillespie.Andrew@epa.gov]; Bahadori, Tina [Bahadori.Tina@epa.gov]; Jones, Samantha [Jones.Samantha@epa.gov]; Lambert, Jason [Lambert.Jason@epa.gov]; Lavoie, Emma [Lavoie.Emma@epa.gov]; Owens, Beth [Owens.Beth@epa.gov]; Moore, Alexa [moore.alexa@epa.gov]; Champlin, Anna [Champlin.Anna@epa.gov]; Rodan, Bruce [rodan.bruce@epa.gov]; Mattas-Curry, Lahne [Mattas-Curry.Lahne@epa.gov]; Raffaele, Kathleen [raffaele.kathleen@epa.gov]; Gervais, Gregory [Gervais.Gregory@epa.gov]; Leonard, Paul [leonard.paul@epa.gov]; Foster, Stiven [Foster.Stiven@epa.gov]; Libelo, Laurence [Libelo.Laurence@epa.gov]; Soares, Barbara [soares.barbara@epa.gov]; Lehman, Rachel [lehman.rachel@epa.gov]; Murphy, Elizabeth [Murphy.Elizabeth@epa.gov]; Lan, Alexis [lan.alexis@epa.gov]; Albert, Ryan [Albert.Ryan@epa.gov]; Nickerson, William [Nickerson.William@epa.gov]; Bolen, Brittany [bolen.brittany@epa.gov]
CC: Underwood, Patricia CIV (US) [patricia.underwood6.civ@mail.mil]; Thayer, Kris [thayer.kris@epa.gov]; hga0@cdc.gov; cjc3@cdc.gov; masten@niehs.nih.gov; Brinkerhoff, Chris [Brinkerhoff.Chris@epa.gov]; Benson, Amy [Benson.Amy@epa.gov]
Subject: Update: Background/communication materials for draft human health toxicity assessments for GenX chemicals and PFBS

Update for all is that we will be posting the pre-pub version of the FRN tomorrow.

From: Grevatt, Peter
Sent: Tuesday, November 13, 2018 11:55 AM
To: 'patricia.m.underwood.civ@mail.mil' <patricia.m.underwood.civ@mail.mil>; 'maria.vargas@navy.mil' <maria.vargas@navy.mil>; 'wanda.holmes@navy.mil' <wanda.holmes@navy.mil>; 'freeman.holifield.mil@mail.mil' <freeman.holifield.mil@mail.mil>; 'andrew.rak@noblis.org' <andrew.rak@noblis.org>; 'andrew.rak2.ctr@mail.mil' <andrew.rak2.ctr@mail.mil>; 'mark.s.johnson.civ@mail.mil' <mark.s.johnson.civ@mail.mil>; 'jennifer.corack@navy.mil' <jennifer.corack@navy.mil>; Anita.K.Meyer@usace.army.mil; 'james.s.smith454.civ@mail.mil' <james.s.smith454.civ@mail.mil>; 'barry.marcel@us.af.mil' <barry.marcel@us.af.mil>; 'resha.m.putzrath.civ@mail.mil' <resha.m.putzrath.civ@mail.mil>; 'Sandra.Howard@hhs.gov' <Sandra.Howard@hhs.gov>; Suzanne_Fitzpatrick <Suzanne.Fitzpatrick@fda.hhs.gov>; 'Jason.Aungst@fda.hhs.gov' <Jason.Aungst@fda.hhs.gov>; 'Penelope.Rice@fda.hhs.gov' <Penelope.Rice@fda.hhs.gov>; 'Paul.South@fda.hhs.gov' <Paul.South@fda.hhs.gov>; 'wic1@cdc.gov' <wic1@cdc.gov>; 'txf5@cdc.gov' <txf5@cdc.gov>; 'pjb7@cdc.gov' <pjb7@cdc.gov>; 'Christopher.Weis@nih.gov' <Christopher.Weis@nih.gov>; 'miller.aubrey@nih.gov' <miller.aubrey@nih.gov>; 'suzanne.fenton@nih.gov' <suzanne.fenton@nih.gov>; 'michael.devito@nih.gov' <michael.devito@nih.gov>; 'birnbaumls@niehs.nih.gov' <birnbaumls@niehs.nih.gov>; 'fjh1@cdc.gov' <fjh1@cdc.gov>; 'seg3@cdc.gov' <seg3@cdc.gov>; 'eaw0@cdc.gov' <eaw0@cdc.gov>; 'iwa6@cdc.gov' <iwa6@cdc.gov>; 'oii2@cdc.gov' <oii2@cdc.gov>;

'pxp5@cdc.gov' <pxp5@cdc.gov>; 'linda.s.wennerberg@nasa.gov' <linda.s.wennerberg@nasa.gov>; 'Margo_Schwab[redacted]; 'Vladik_Dorjets[redacted] 'Danielle_Y_Jones[redacted] 'Jody_M._Barringer[redacted]; 'Christopher_D_Gamache@[redacted] 'mfocazio@usgs.gov' <mfocazio@usgs.gov>; 'Terra.irons@va.gov' <Terra.irons@va.gov>; 'Beth.moore@em.doe.gov' <Beth.moore@em.doe.gov>; Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Holsinger, Hannah <Holsinger.Hannah@epa.gov>; Wadlington, Christina <Wadlington.Christina@epa.gov>; Tiago, Joseph <Tiago.Joseph@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>; Behl, Betsy <Behl.Betsy@epa.gov>; Strong, Jamie <Strong.Jamie@epa.gov>; Jacobs, Brittany <Jacobs.Brittany@epa.gov>; Donohue, Joyce <Donohue.Joyce@epa.gov>; Miller, Gregory <Miller.Gregory@epa.gov>; Harper, Ashley <harper.ashley@epa.gov>; 'Drinkard, Andrea' <Drinkard.Andrea@epa.gov>; 'Behrsing, Tracy'; Babcock, Amy <babcock.amy@epa.gov>; Aubee, Catherine <Aubee.Catherine@epa.gov>; Henry, Tala <Henry.Tala@epa.gov>; Orme-Zavaleta, Jennifer <Orme-Zavaleta.Jennifer@epa.gov>; Gillespie, Andrew <Gillespie.Andrew@epa.gov>; Bahadori, Tina <Bahadori.Tina@epa.gov>; Jones, Samantha <Jones.Samantha@epa.gov>; Lambert, Jason <Lambert.Jason@epa.gov>; Lavoie, Emma <Lavoie.Emma@epa.gov>; Owens, Beth <Owens.Beth@epa.gov>; Moore, Alexa <moore.alexa@epa.gov>; Champlin, Anna <Champlin.Anna@epa.gov>; Rodan, Bruce <rodan.bruce@epa.gov>; Mattas-Curry, Lahne <Mattas-Curry.Lahne@epa.gov>; Raffaele, Kathleen <raffaele.kathleen@epa.gov>; Gervais, Gregory <Gervais.Gregory@epa.gov>; Leonard, Paul <leonard.paul@epa.gov>; Foster, Stiven <Foster.Stiven@epa.gov>; Libelo, Laurence <Libelo.Laurence@epa.gov>; Soares, Barbara <soares.barbara@epa.gov>; Lehman, Rachel <lehman.rachel@epa.gov>; Murphy, Elizabeth <Murphy.Elizabeth@epa.gov>; Lan, Alexis <lan.alexis@epa.gov>; Albert, Ryan <Albert.Ryan@epa.gov>; Nickerson, William <Nickerson.William@epa.gov>; Bolen, Brittany <bolen.brittany@epa.gov>

Cc: Underwood, Patricia CIV (US) <patricia.underwood6.civ@mail.mil>; Thayer, Kris <thayer.kris@epa.gov>; hga0@cdc.gov; cjc3@cdc.gov; 'masten@niehs.nih.gov' <masten@niehs.nih.gov>; Brinkerhoff, Chris <Brinkerhoff.Chris@epa.gov>; Benson, Amy <Benson.Amy@epa.gov>

Subject: Background/communication materials for draft human health toxicity assessments for GenX chemicals and PFBS

Please see attached to this message the communication materials related to the upcoming release of the draft human health toxicity assessments for GenX chemicals and PFBS that we discussed with the states and state associations on a call earlier today.

PLEASE DO NOT RELEASE THESE MATERIALS PRIOR TO THE PUBLIC RELEASE OF THE DRAFT TOXICITY ASSESSMENTS!

Thanks, P. Grevatt

Summary

Federal-State Toxicology and Risk Analysis Committee (FSTRAC) Webinar

October 17, 2018

"Safe and Clean Water"

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Wednesday, October 17, 2018

Welcome and Introduction.....**Shamima Akhter**, EPA/OW

HECD Accomplishments and Workplan for FY 2019 .....**Betsy Behl**, EPA/OW

EPA Biosolids Program .....**Elizabeth Resek**, EPA/OW

Overview of PFAS Groundwater Contamination and Derivation of
Health-based Guidance in Minnesota .....**Helen Goeden**, Minnesota Department of Health

Per- and Polyfluoroalkyl Substances in Source and
Treated Drinking Waters of the United States .....**Susan Glassmeyer**, EPA/ORD

PFAS Hot Topics.....**State and Tribal Attendees**

Appendix A. FSTRAC Webinar Registration List

Appendix B. FSTRAC Webinar Speaker Bios

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Welcome and Introduction

Dr. Shamima Akhter from the Office of Science and Technology's Health and Ecological Criteria Division (OST/HECD) in the U.S. Environmental Protection Agency (EPA) Office of Water (OW) welcomed everyone in the room and on the telephone to the Fall 2018 Federal-State Toxicology and Risk Analysis Committee (FSTRAC) webinar.

FSTRAC started in 1985. The group began as part of EPA's communication strategy to build a better relationship with the states and tribes and to facilitate the exchange of research priorities and results, policy concerns regarding water-related human health risk assessment, and other technical information. FSTRAC is made up of representatives from state and tribal health and environmental agencies, and EPA headquarters and regional personnel. For more information, visit the FSTRAC website at https://www.epa.gov/water-research/federal-state-toxicology-risk-analysis-committee-fstrac.

Dr. Akhter announced that approximately 121 FSTRAC members had registered for the webinar. Currently, there are 245 FSTRAC members; 23 new members have joined FSTRAC since the last webinar held in February 2018. She noted that for today's webinar there would be four presentations to be followed by a round-robin state and tribal per- and polyfluoroalkyl substances (PFAS) hot topics session where states and tribes are encouraged to briefly introduce their hot topics.

Dr. Akhter went over the features of the webinar. She noted that all audience phone lines were muted to reduce the likelihood of background noise and other distractions. Dr. Akhter invited audience members with comments or questions for the presenters to type in the chat box located on the right side of the screen and click the send icon. She explained that, time permitting, questions would be posed to the presenters at the end of each presentation. Dr. Akhter invited anyone with technical problems during the webinar to please inform the leaders by typing in the same chat box. For people whose computers did not support streaming audio, they were provided with the option of calling in to the conference line to listen to the webinar. For those participants preferring to call in, a call-in number and code were provided in the notes box on the right side of the screen. Calling into the conference line was not required for most users. Dr. Akhter also noted that using both the computer speakers and the phone line will create an echo. She mentioned that the presentations and meeting summary would be posted to the FSTRAC SharePoint site after the webinar. If participants had any additional questions for the speakers, Dr. Akhter asked the participants to please contact the speakers directly.

Dr. Akhter noted that quite a few people were in the EPA meeting room, including Ms. Betsy Behl and Ms. Elizabeth Resek. Also, in the meeting room were Dr. Jamie Strong, Dr. Edward Ohanian, Ms. Thais Fournier, and Dr. Brittany Jacobs, as well as Ms. Susan Lanberg from Tetra Tech.

Dr. Akhter introduced the first speaker, Ms. Betsy Behl, the Director of HECD in EPA OST. Ms. Behl gave a presentation titled "HECD Accomplishments and Workplan for FY 2019."

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HECD Accomplishments and Workplan for FY 2019

Elizabeth (Betsy) Behl
Health and Ecological Criteria Division
Office of Science and Technology, Office of Water
U.S. Environmental Protection Agency
202-566-0788
behl.betsy@epa.gov

Visuals follow. Please contact the speaker for more information.

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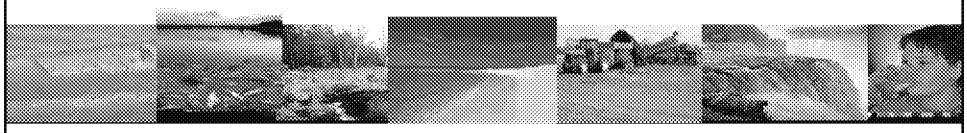
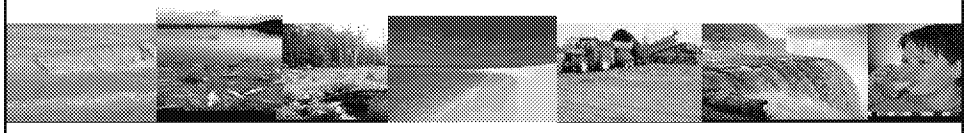


HECD Accomplishments and Workplan for FY 2019

Betsy Behl, Director
Health and Ecological Criteria Division
Office of Science and Technology, Office of Water
U.S. Environmental Protection Agency
FSTRAC Meeting, October 17, 2018



Overview

- Accomplishments Oct 2017 – Sept 2018
- 2019 Priorities

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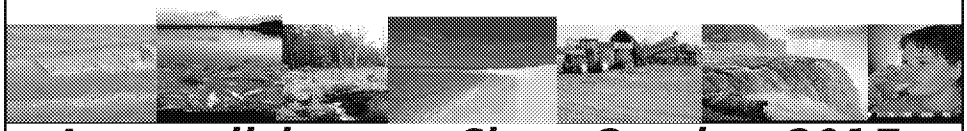
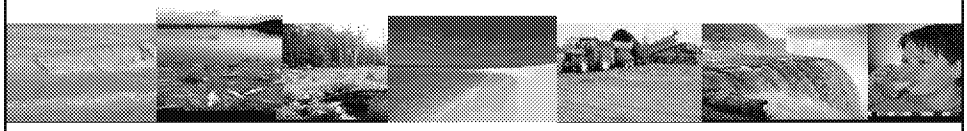


Accomplishments Since October 2017

- Aquatic Life
  - Held SETAC Metals Aquatic Bioavailability Workshop and planned supporting publications
  - Established CRADA with 8 metals associations to develop research supporting overarching simple metals model that can predict the bioavailability and toxicity of metals in water
  - Developed a Scoping document for SAB consultation on updates to the 1985 guidelines for aquatic life criteria
  - Update Aluminium aquatic life criteria based on response to public comments
  - Developed selenium protective value for aquatic-dependent wildlife for CA
  - Support state aquatic life criteria development efforts
- Biosolids
  - Met statutory requirements to publish 2013 and 2015 biennial reviews
  - Screening model under development



Accomplishments Since October 2017

- Nutrients
  - Hosted 3 multi-state and regional technical workshops on the state of the science for nutrients and held 4 national webinars on nutrient science by nationally-recognized scientists.
  - Support state nutrient water quality management efforts by providing direct technical assistance to 14 states, 1 territory and 4 tribes.
  - Completed 3 pilots (IA, UT, OK) of revised nutrient criteria for lakes and reservoirs addressing three designated uses
- Biocriteria
  - Partnered with USGS to develop a regional voucher flora for lake sediment diatoms in the northeast that provides a technical foundation for developing lake bioassessment programs
  - Developed draft BCG models for state and county programs in WA/OR, RI, PR/USVI to help set and track attainment of restoration and protection goals, support biocriteria development, and communicate with stakeholders.

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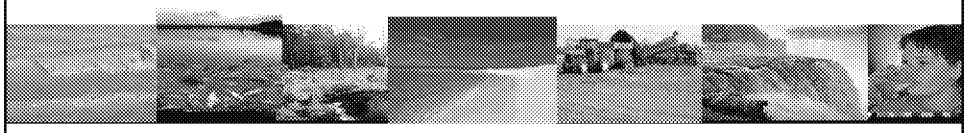
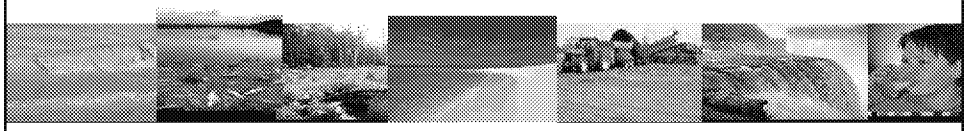


Accomplishments Since October 2017

- Human Health
  - Development of GenX Chemicals Toxicity Values
  - Support PR of perchlorate BBDR model and development of "Approaches" document
  - Technical support for UCMR 5, CCL5, and RegDet 4
  - Published editorial corrections to the 2012 Health Advisory Table
  - Initiated outreach to HA-table users to create a modernized/ user friendly table and to build support for the release of a revamped table
    - State health agencies;
    - AWWA;
    - ACWA
    - Region 5 tribes
  - Provided technical support to OGC and OCSPP in responding to a petition under section 21 of TSCA on fluoride.



Accomplishments Since October 2017

- Human Health
  - Completed 5-Year Review of 2012 Recreational Criteria
  - Draft Human Health Recreational Ambient Water Quality Criteria and/or Swimming Advisories for Microcystins and Cylindrospermopsin
  - Authored several papers on Coliphage to support recreational criteria
  - HABs
    - Outreach and workshops (regions 1,3,4).
    - Led in development of the HABHRCA Progress and Implementation Report to Congress.
    - Authored chapter on Risk Communication for the WHO Cyanobacteria in Water Guideline
  - Participated in WHO guideline development efforts
  - Water reuse
    - Collaborated on development of the OGWDW Water Reuse Compendium
    - Direct Potable Reuse: Microbial Risk Assessment/Sensitivity Analysis presentations and publications
    - Represented OW on Blue Ribbon Commission for Decentralized Water Reuse

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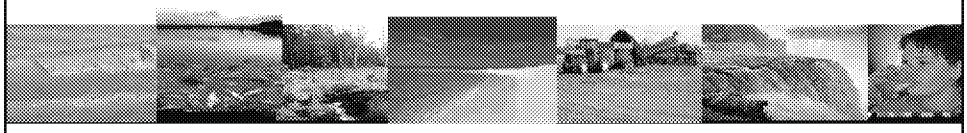
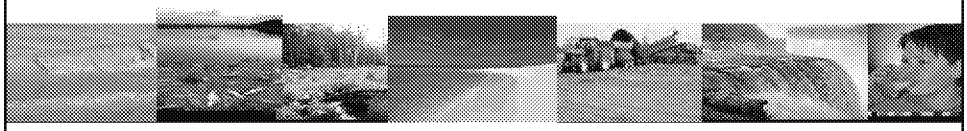


FY2019 Priorities

- Aquatic Life
  - Publish Final updated Aluminum Aquatic Life Criteria
  - Work with metals associations to develop modeling approach for metals
    - Publish articles on metals bioavailability and modeling
    - Development of report on current modeling approaches and QA available data
  - Problem formulation for updated chloride criteria
  - Hold consultation with SAB on plans to update Guidelines for Aquatic Life Criteria Development (1985)
  - Hold frequency and duration expert workshop for toxics
  - Plan regional meetings on aquatic life criteria for toxics
  - Work with states to prioritize criteria development
  - Support to Regions and States on criteria development for toxics and to Regions ESA consultation on aquatic life criteria



FY2019 Priorities

- Nutrients
  - Draft nationally applicable model linking nutrient concentrations (total nitrogen and total phosphorus) in lakes to specific adverse effects for 3 designated uses.
    - Continue pilots
    - Publish draft in 2019
  - Support to Regions and States on criteria development for nutrients through NSTEPS
    - Technical support to 11 states, 1 tribe, and 1 territory
  - Launch NSTEPS on-line as a pilot on cloud.gov
- Biocriteria
  - Support to Regions and States on biocriteria development in 11 states and 2 territories

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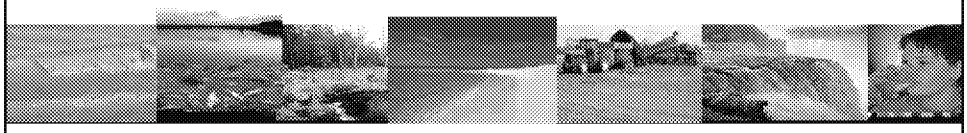
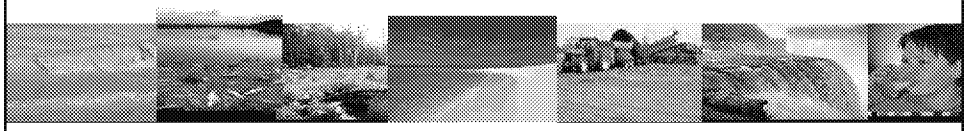


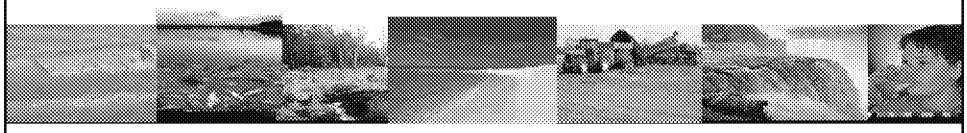
FY2019 Priorities

- Human Health
  - Final recreational criteria and/or swimming advisories for two cyanotoxins
  - Scoping development of Recreational Criteria for Coliphage- a viral indicator.
  - 5-Year Review of 2012 Recreational Criteria follow up
  - Support SDWA activities:
    - perchlorate assessment
    - RegDet 4 proposal
    - Development of Health Advisories, as identified
  - Support to Regions and States on Human Health Criteria and Health Advisories
  - User-centered design to modernize the HA table
  - HABs (state adoption of methods to address HABs in recreational waters; HA scoping for emerging algal toxins; regional workshops)



FY2019 Priorities

- Biennial Biosolids Reviews 2016-17 Review – expect to publish December 2018
- Develop assessment tools and risk assessments for chemicals identified in biosolids
  - Biosolids Screening Tool--Expect to release for Public comment in 2019
  - Screening pollutants in biosolids – Expect to Begin in 2019/2020 following finalization of the screening tool
- Scope a risk assessment for per- and Polyfluoroalkyl Substances (PFAS)



Questions??

Contact information:

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Questions and Comments

Q. Heather Bolstad: Should the second slide of the presentation read October 2017?

A. Betsy Behl: Yes, the dates on the overview slide should be October 2017 to September 2018.

Q. Rich Kapuscinski: What chemicals comprise "Gen X" substances?

A. Jamie Strong: Hexafluoropropylene oxide (HFPO) dimer acid and HFPO dimer acid ammonium salt. These are the two major chemicals that are used. GenX is not actually a chemical. It's a processing aid technology. GenX chemicals are replacements for perfluorooctanoic acid (PFOA).

Q. Brandon Kernen: The Agency for Toxic Substances and Disease Registry (ATSDR) announced new Environmental Media Evaluation Guides (EMEGs) for PFOA, perfluorooctane sulfonic acid (PFOS), perfluorononanoic acid (PFNA), and perfluorohexane sulfonate (PFHxS) in drinking water and soil yesterday through its list serv. It provides a concentration in soil and drinking water that will not cause adverse effects. The values do not align with EPA's Health Advisory (HA). Can you explain how these values should be messaged relative to the HA for PFOA and PFOS? What are the differences? How should they be used?

A. Jamie Strong: The only thing I'm aware of that ATSDR has put out for public comment is a Toxicological Profile for various per- and polyfluoroalkyl substances (PFAS), including PFOA and PFOS. EPA worked in conjunction with other federal agencies in review of those assessments before they were released for public comment and we await the outcome of that public comment period. The ATSDR values for PFOS and PFOA are different based on the decisions that were made by ATSDR. We will wait to see the final values.

A. Betsy Behl: I think there are some materials on EPA's website (https://www.epa.gov/pfas) that describe work we did with ATSDR. I'm not aware of any values that were published yesterday by ATSDR for concentrations in soils and so forth.

C. David Gordon: I worked for ATSDR for a few years. I'm no longer with them but I understand EMEGs. They are screening values and they are not meant to be drinking water standards. Drinking water standards for noncarcinogens always use a relative source contribution (RSC) factor to account for non-drinking water exposures. ATSDR also uses different drinking water ingestion rates than EPA uses for an adult. ATSDR uses a little over 3 L/day while EPA uses 2.5 L/day. The child EMEGs use an infant exposure, drinking water ingestion rate, and body weight.

Q. Participant from Louisiana Department of Environmental Quality (LDEQ): Can you please provide any details on the review of the 1985 Aquatic Life Guidelines?

A. Betsy Behl: We are reviewing the requirements and we are looking at how to develop methodologies that will enable us to produce criteria with less stringent data requirements. That is part of it, but it is a lot more complicated than that. I am not comfortable providing more details until we get the okay to go ahead with the Science Advisory Board consultation. We are engaged with our Office of Research and Development in trying to bring in new science. There

is a lot of new science since 1985 that could be used to improve those guidelines. Those guidelines have stood the test of time. They were very good and used across the world, but there is new science.

Q. Gloria Post: Where are the EMEGs posted?

A. Helen Goeden: I don't think they are posted. They are shared with states who have cooperative agreements. They were shared yesterday.

Q. Leslie McGeorge: Could you tell us the status of science to develop recreational criteria for other cyanotoxins, including anatoxin?

A. Betsy Behl: When we developed the HAs for microcystins and cylindrospermopsin, we looked for anatoxin-a as well to see if there were enough data or information to develop a HA. We took that information to peer reviewers and they came back with comments that suggested that we did not have enough data. I know that some states have developed guidelines, but we do need to follow our process. Subsequent to that, we have and we will continue to perform literature searches for other algal toxins.

A. Jamie Strong: We have looked in the literature for information on nodularin and saxitoxin. We recently performed an updated literature search for anatoxin-a, just to make sure nothing new had come out since we put out the HESDs for anatoxin-a, microcystins, and cylindrospermopsin in 2015. So, we are continuing to keep up with the literature.

A. Betsy Behl: If we get to that point where we think we have enough data to develop Health Effects Support Documents (HESDs) for other algal toxins (with nodularins, saxitoxin, and anatoxin-a at the top of the list), we will update HESDs and go through a peer review process, but we are not there yet.

C. Participant from LDEQ: Thank you for the input.

EPA Biosolids Program

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Visuals follow. Please contact the speaker for more information.

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EPA Biosolids Program

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EPA Biosolids Program

Section 405(d) of the Clean Water Act (CWA) Requires EPA to:

- Establish numeric limits and management practices that protect public health and the environment from the reasonably anticipated adverse effects of chemical and microbial pollutants during the use or disposal of sewage sludge.
- Review sewage sludge regulations every two years to identify additional toxic pollutants that occur in biosolids and regulate those pollutants if sufficient scientific evidence shows they may harm human health or the environment.

Biosolids Update

- Biennial Reviews
  - EPA is required to review biosolids regulations every two years to identify pollutants that occur in biosolids and regulate those posing risk.
  - Completed 2016-2017 Biennial Review (December 2018).
- Biosolids Screening Tool
  - Identifies pollutants, pathways and receptors of greatest interest and informs decisions about the need to perform more refined risk assessments.
  - Revisions still ongoing; plans for peer and public review underway (2019).
  - Next Steps: Screen pollutants found in biosolids that have sufficient data.
- 10 Pollutant Risk Assessments
  - Ba, Be, Mn, Mo, Ag, 4-Chloroaniline, Fluoranthene, Pyrene, Nitrate, Nitrite
  - Multi-media, multi-pathway, multi-receptor modeling framework being revised.
  - Next Steps: Complete/make public first 10 risk assessments.

Biosolids Update

- EPA Conducted National Sewage Sludge Surveys (NSSS):
  - 1988 (reported in 1989 and done in support of the 1993 Part 503 Biosolids Rule)
  - 2001 (reported in 2007)
  - 2006 (reported in 2009)
- EPA did not test for PFAS chemicals as part of the NSSS.
- Arizona State University's National Sewage Sludge Repository (NSSR) contains digested samples from EPA's 2001 and 2006 NSSS.
  - PFBA, PFPeA, PFHxA, PFHpA, PFOA, PENA, PFDA, PFUnDA, PFDoDA, PFBS, PFHxS, PFOS and PFOSA.
  - All 13 PFASs analyzed were detected in all composite biosolids samples except for PFBA, PFHpA and PFBS.
  - The most abundant PFASs detected were PFOS followed by PFOA.

Venkatesan AK, Halden RU (2013) National inventory of perfluoroalkyl substances in archived U.S. biosolids from the 2001 EPA National Sewage Sludge Survey. J Hazard Mater 252-253:413-418

Biosolids Update

- EPA is initiating problem formulation for PFAS in biosolids.
- Problem formulation is part of the risk assessment (RA) framework that:
  - Articulates the purpose for the assessment
  - Defines the problem
  - Determines a conceptual plan for analyzing and characterizing risk (EPA 2014, EPA 1998).
- Problem formulation provides information on:
  - Chemical's sources and occurrence
  - Fate and transport in the environment
  - Toxicological characteristics and factors affecting toxicity
  - Analysis plan describing the scientific approach
- Includes engagement to gain input from states and tribes, risk managers, scientists, and members of the biosolids community regarding foreseeable science and implementation issues.

Biosolids Update

Thank You

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Questions

Q. Kofi Asante-Duah: What is the basis for the list of selected "chemicals of concern" for the biosolids?

A. Elizabeth Resek: It is part of our statutory requirement to look for occurrence of chemical and microbial pollutants in biosolids. Right now, we are fulfilling part of the statute by attempting to identify pollutants in biosolids. However, just because pollutants are in biosolids does not mean they necessarily pose a risk. We've made it our top priority in the biosolids program to evaluate risk and we are finalizing the tools necessary to do that.

Q. Audrey Rush: What levels of PFAS were found in the Arizona biosolids analysis?

A. Elizabeth Resek: I provided the following citation for you in my presentation so you can review this information:

> Venkatesan A.K. and R.U. Halden. 2013. National inventory of perfluoroalkyl substances in archived U.S. biosolids from the 2001 EPA National Sewage Sludge Survey. *J Hazard Mater* 252-253:413-418.

When you read the paper, you will notice that there is a difference in approach from what EPA did in the Targeted National Sewage Sludge Survey (2009). While Dr. Halden has the EPA samples in his repository, he does not have the information that ties a particular sample to the wastewater treatment plant where the sample was taken. Also, when testing for PFAS, they used composite samples. I think it still says something that in our sewage sludge survey samples they're finding PFAS when they test for.

Q. Clark Freise: Would the current efforts lead to leaching standards for biosolid PFAS that would be protective of groundwater to the EPA HAs?

A. Betsy Behl: That's a little premature. When we do the risk assessment for any of these chemicals in biosolids, we are looking at multiple pathways and multiple species exposed. People clearly are one of those species and drinking water is clearly one of those pathways. We will use the measurement endpoints that are available for any compounds that we have. Right now, we have drinking water health advisories for PFOA and PFOS.

Overview of PFAS Groundwater Contamination and Derivation of Health-based Guidance in Minnesota

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Visuals follow. Please contact the speaker for more information.

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DEPARTMENT OF HEALTH

Overview of PFAS Groundwater Contamination and Derivation of Health-based Guidance in Minnesota

October 17, 2018

FSTRAC Webinar Meeting

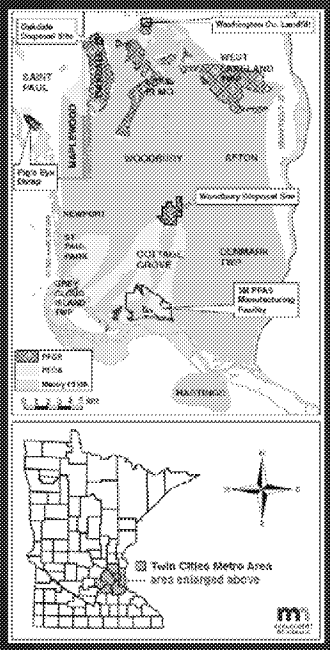
Helen Goeden, PhD | Senior Toxicologist/Risk Assessor

Outline

- Historical Overview of PFAS Contamination in Minnesota
- MDH PFAS Health-Based Water Guidance
  - Types of Guidance Values
  - 2017 Re-evaluations
- Summary
- Questions

Historical Overview of Contamination

- 2002: request for development of health-based guidance values for PFOS & PFOA
- 2004: investigation of legacy disposal areas found PFOS & PFOA contamination drinking water supplies of several suburbs - - initiating an extensive effort to test public & private wells in the area
- 2006: new analytical methods, adding PFBA, PFPeA, PFHxA, PFBS & PFHxS. Resulted in uncovering much larger area of contamination
- 2007 – 2009: derived guidance values for PFBA & PFBS and revised values for PFOA & PFOS



Historical Overview (con't)

To date:

- Multiple public water supplies and >2,600 private wells have been sampled.
- 5 public water systems have wells > current guidance
- > 950 private wells > current guidance values.
- East Metro plume covers > 150 square miles, affecting drinking water supplies of >140,000 Minnesotans
- Statewide evaluations of other potential sources (e.g. fire-training facilities, chrome plating operations, WWTP, etc.) have also been conducted

MDH Water Guidance

- 1989 Groundwater Protection Act
  Requires MDH to protect public health by developing human health-based values for contaminants found in Minnesota's groundwater as the result of human activity. Goal is to protect this resource as a potential source of drinking water.
  - Health Risk Limit (HRL) – a concentration of a chemical, or mixture of chemicals, that is likely to pose little or no risk to human health.
    [Based solely on health effects & does not consider cost, technology, etc.]
- HRLs are promulgated in rule. Application/use is not specified in rule but is determined by individual regulatory programs
- Guidance values are derived between rule promulgations:
  - Health Based Value (HBV): are 'rule in waiting' - follows HRL derivation methodology
  - Risk Assessment Advice (RAA) - ↑ uncertainty, use of surrogate, or different methods

MDH – 2017 PFAS Water Guidance

PFAS	Health Endpoints[1]	Mean Human Half-life[2] (~5 – 95th percentile range)	Water Guidance (µg/L) 2017	Previous
PFBA	Liver, Thyroid	3 days (1.2 – 4.6 days)	7	7
PFBS	Developmental, Female Repro system, Thyroid	27.7 days (13.1 – 45.7 days)	2	7
PFHxS	(see PFOS)	5.3 years (2.2 – 14.6 years)	(see PFOS)	
PFOA	Developmental, Immune, Liver, Kidney	2.3 years (1.5 – 7.0 years)	0.035	0.3
PFOS	Developmental, Immune, Liver, Thyroid	5.4 years (2.2 – 8.5 years)	0.027*	0.3

[1]Used in additivity (mixtures) assessments
[2]Extreme values removed

More information can be found at:

MDH – Water Guidance

Standard HRL/HBV Equation:

$$\text{HBG}\left(\frac{\mu g}{L}\right) = \frac{\text{RfD}\left(\frac{mg}{kg \cdot day}\right) \times \text{RSC} \times 1000\,\frac{\mu g}{mg}}{\text{IR}\left(\frac{L}{kg \cdot day}\right)}$$

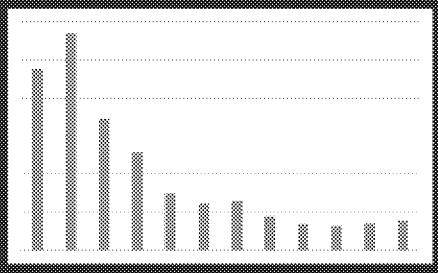
RfD (Reference Dose) – represents a dose at which there is little or no risk of health effects
(serum level used a measure of internal dose)

RSC (relative source contribution) – do not want total exposure to exceed RfD so you need to account for non-water sources of exposure (e.g., diet)

IR (Intake Rate) – how much water someone drinks

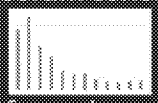
Direct Exposure Concerns

- Impact of Bioaccumulation Potential
  - Long half-life results in exposures, even short duration, to stay in body for years beyond period of external exposure
  - Repeated exposures lead to accumulation (build-up) within the body
  - Water concentrations in ppt result in serum concentrations in ppb
  - Much higher intake rates in early-life



Additional (indirect) Exposure Concerns

- Impact of Bioaccumulation Potential
  - Long half-life results in exposures, even short duration, to stay in body for years beyond period of external exposure
  - Repeated exposures lead to accumulation (build-up) within the body
  - Water concentrations in ppt result in serum concentrations in ppb
  - Much higher intake rates in early-life



  - Accumulated levels can be transferred to offspring

    - Placental transfer* (PFOA ~60 to 200%)
    - Breastmilk transfer** (PFOA mean ~2.6 - 12%, max not reported)

** Empirical Cord:Maternal serum ratios reported in literature*
*** Empirical Breastmilk:Maternal serum ratio reported in literature*

Calculating Daily Serum Concentrations

$$\textbf{Serum Concentration}\left(\frac{mg}{L}\right) = \frac{\textbf{Dose}\left(\frac{mg}{kg \cdot day}\right)}{\textbf{Clearance Rate}\left(\frac{L}{kg \cdot day}\right)}$$

$$\textbf{Serum Concentration}\left(\frac{\mu g}{L}\right) = \frac{\textbf{Water/Breastmilk Conc}\left(\frac{\mu g}{L}\right) \times \textbf{Water/Breastmilk IR}\left(\frac{L}{kg \cdot day}\right)}{\textbf{Clearance Rate}\left(\frac{L}{kg \cdot day}\right)}$$

Where

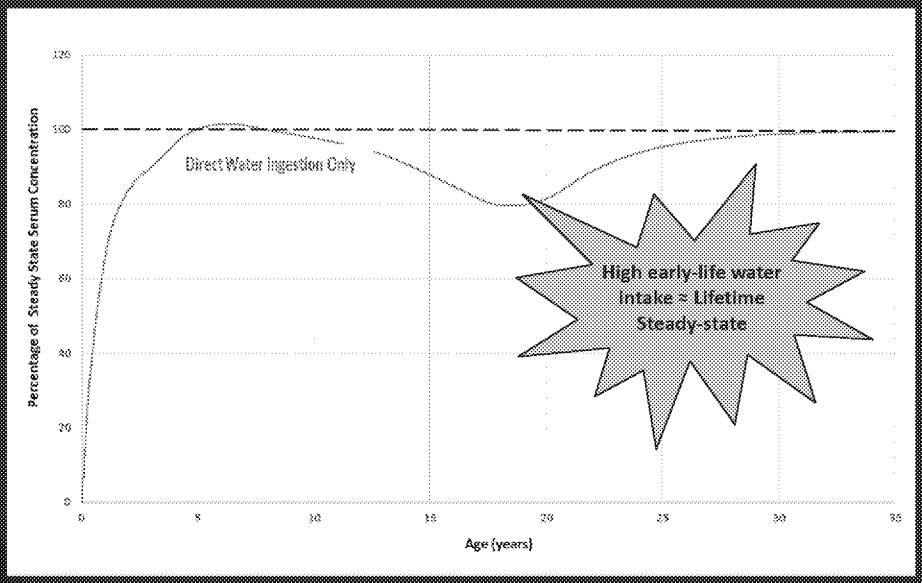
$$\textbf{Clearance Rate}\left(\frac{L}{kg \cdot day}\right) = \textbf{Volume of Distribution}\left(\frac{L}{kg}\right) \times \left(\frac{ln(2)}{half - life\ (d)}\right)$$

Model Parameter Values (PFOA)

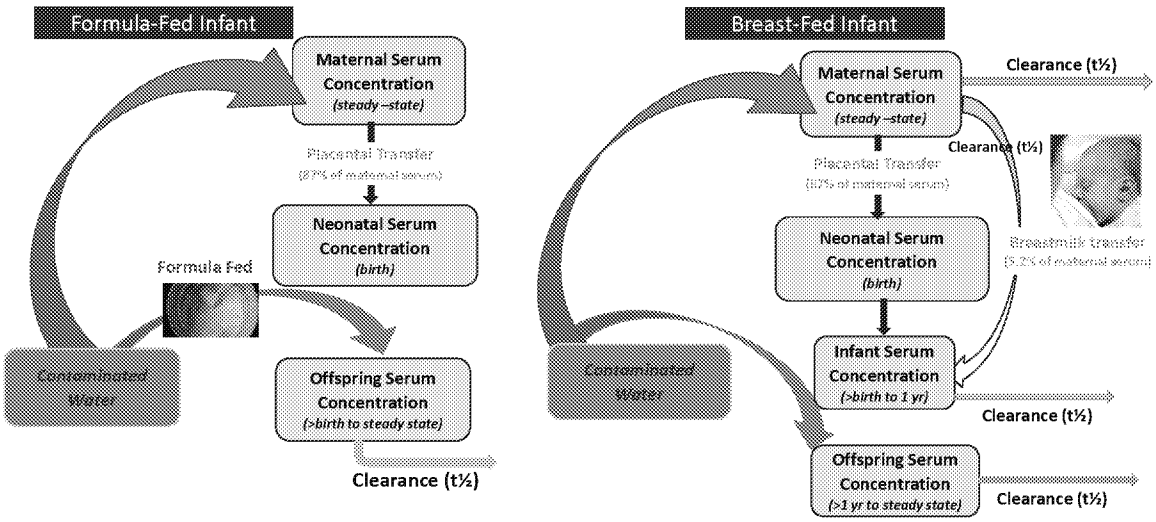
Model Parameter	Central Tendency Value	Upper Percentile Value
Half-life (days)	**840 (2.3 years)**	1679 (4.6 years)
Placental Transfer (infant:mother)	**0.87**	1.69
Breastmilk Transfer (milk:mother)	**0.052**	0.12
Breastmilk Intake[1] (mL/kg-d) and Body weight[2] (kg) (0-12 months of age)	Mean	**Upper percentile**
Breastfeeding duration	6 months, then phased out to zero by 12 months of age	**12 months**
Water Intake[1] (mL/kg-d) and Body weight[2] (kg) (0-55+ years of age)	Mean	**95th percentile**
Volume of Distribution (L/kg)	**0.17**	
Volume of Distribution Age Adjustment	**2.4 (birth) to 1.0 (age 10)**	

[1] Age-specific intake rates were taken from EPA Exposure Factors Handbook (breastmilk- Table 15-1; water – Table)
[2] Age-specific body weights were calculated from intake data

Standard Approach (PFOA)



Direct + Indirect Exposure Scenarios



Calculating Daily Serum Concentrations

- Infant's serum concentration at birth:

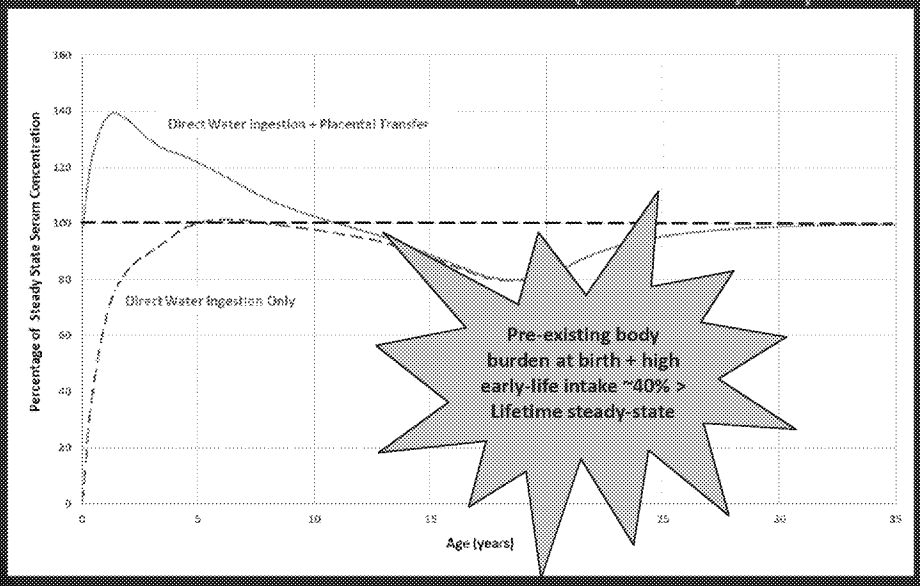
$$Offspring\ Serum\ Conc.\left(\frac{mg}{L}\right) = Maternal\ serum\ conc.\left(\frac{mg}{L}\right) \times placental\ transfer\ factor$$

- Subsequent daily serum concentrations were calculated as:

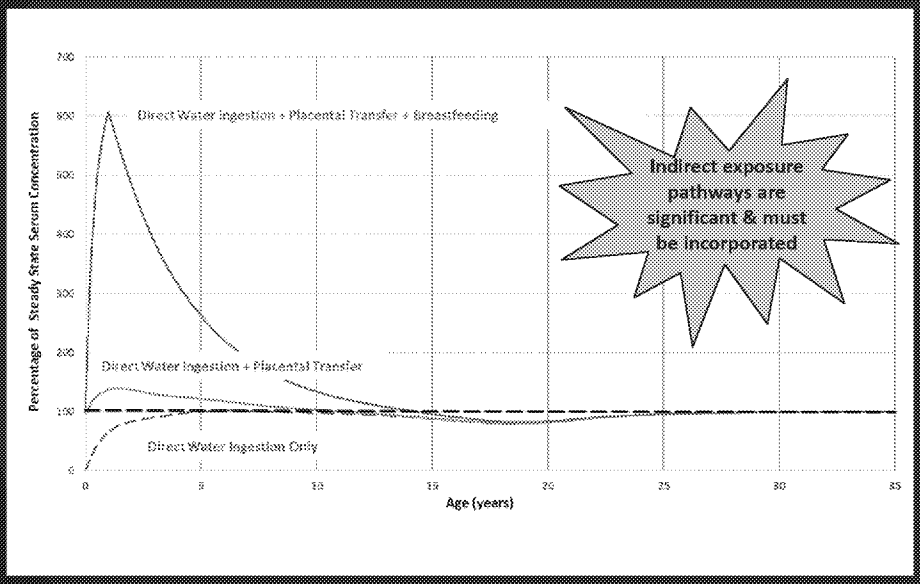
$$Serum\ Conc.\left(\frac{mg}{L}\right) = \left[Prev.day\ Serum\ Conc.\left(\frac{mg}{L}\right) + \frac{Today's\ Intake(mg)}{V_d\left(\frac{L}{kg}\right) \times BW(kg)}\right] \times e^{-k}$$

- To maintain mass balance, maternal daily serum concentrations incorporated loss to the infant via breast feeding.
- Model was validated by comparing results to empirical data and published model results. Also obtained feedback from external reviewers on how to improve model.

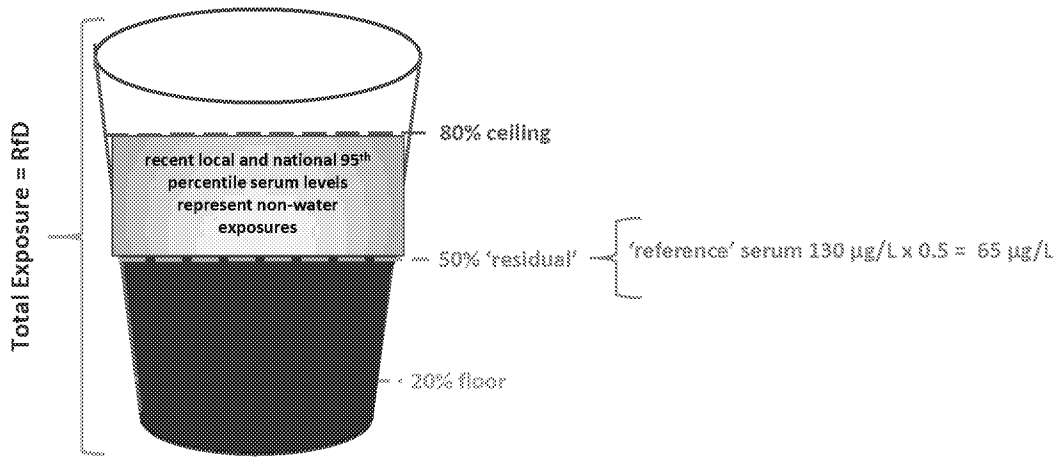
Additional (indirect) Exposure Concerns



Additional (indirect) Exposure Concerns

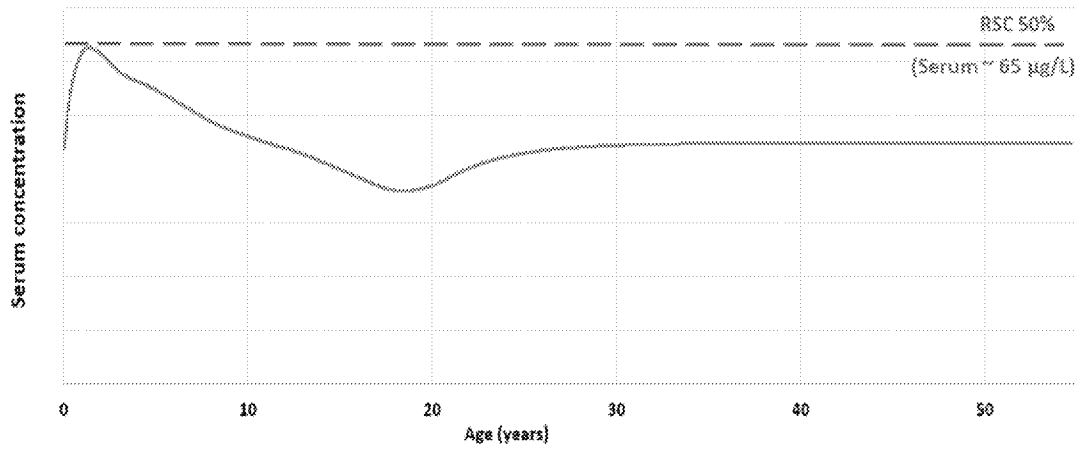


Exposure – RSC Factor*

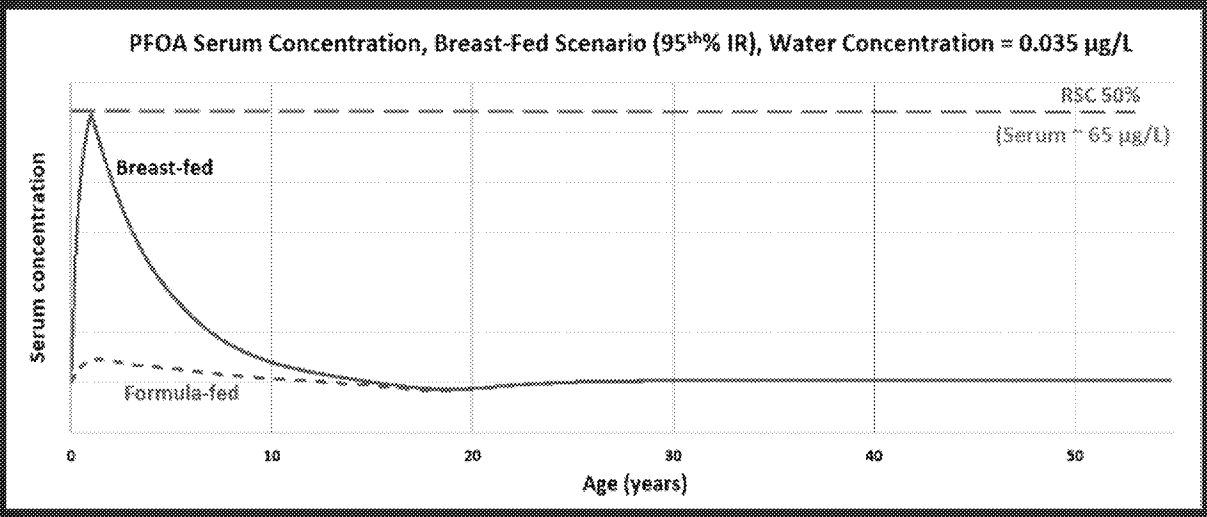


*US EPA 2000 Exposure Decision Tree

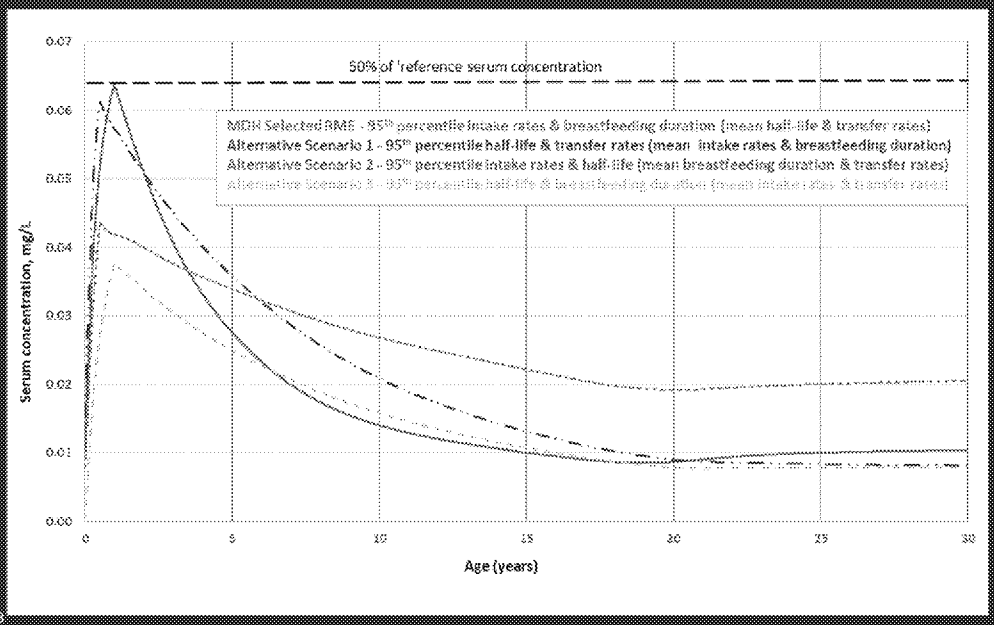
Incorporation of Placental Transfer



Incorporation of Placental & Breastmilk Transfer



Alternative Scenarios



MDH Guidance Summary

- Based on protection of susceptible & highly exposed populations
- Protective for tap water used for drinking, cooking, showering, and other uses
- Cumulative – additivity assessment of chemicals with similar health endpoints

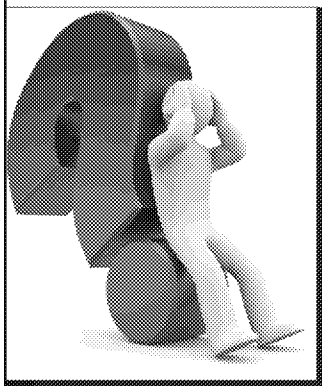
e.g., Liver

XX µg PFBA/L*	+	XX µg PFHxS/L*	+	XX µg PFOA/L*	+	XX µg PFOS/L*	=	Health Risk Index
PFBS HBV		PFHxS 'HBG'**		PFOA HBG		PFOS HBG		

* Detected drinking water concentration
**Currently using PFOS as an interim substitute

Breastfeeding can be a significant exposure pathway for PFHxS, PFOS, and PFOA.
However, breastfeeding is important for the short and long term health of both a mother and infant.
MDH recommends that women currently breastfeeding, and pregnant women who plan to breastfeed, continue to do so.

DEPARTMENT OF HEALTH



Questions?

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651-201-4904

Questions and Comments

Q. Jamie Strong: Are you looking at PFOS again? Are new data available?

A. Helen Goeden: Yes, we are incorporating some additional toxicity information that we did not use last time. To be honest, we did not appreciate that these studies had actual measured serum concentrations, which were the studies we focused on. There's new half-life information in an exposed community which we feel is more representative than the occupational-based half-life that we used in the past.

C. Jamie Strong: Thank you.

Q. Terri Mavencamp: What lab do you use for PFAS?

A. Helen Goeden: We use our Department of Health Public Health Lab that produces all of our analytical results. We had methods for PFOA and PFOS and then worked on expanding our methods to the seven compounds. We have now expanded it beyond that. We have the ability to look for PFAS not just in water, but in soil, produce, serum, and so forth.

Q. Clark Freise: Did you test formula powders for PFAS compounds?

A. Helen Goeden: No, we did not but I believe there are at least one or two publications available in which researchers have looked for PFAS chemicals in formula and really have found very little or no concentrations. We have not done the testing but to our knowledge, powdered formula would not be a significant source.

Q. Gloria Post: Did you conduct a detailed review of the basis of the reference dose (RfD) in addition to your detailed exposure model for infants, or did you decide to use the same RfD that EPA used for its PFOA HA?

A. Helen Goeden: We used the EPA HA document as the starting point of our review. We supplemented that review with some additional information we found through searching for additional publications and looking at some of the key studies in more detail. We look at things in a slightly different way (e.g., we specifically look at different life stages) because our methodology is a bit different than EPA's. So, we used their document as a starting point, but it was not the ending point. We did use the same reference dose as EPA for PFOA, but we did not use the same one for PFOS, for example.

I provided a link in my presentation that conveys our summary sheets (http://www.health.state.mn.us/divs/eh/risk/guidance/gw/table.html). If people want a copy of the Excel-based model or background documentation on the model, please send me an email to request that.

Q. Kevin Cox: Will your slides be available?

A. Shamima Akhter: Yes, we'll provide summary notes and presentation slides on the SharePoint site. We'll provide access to the SharePoint site with log-in information.

C. Kevin Cox: Thanks!

C. Angela Preimesberger: Excellent work by Helen and her colleagues!!

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Per- and Polyfluoroalkyl Substances in Source and Treated Drinking Waters of the United States

Susan Glassmeyer, PhD
National Exposure Research Laboratory
Office of Research and Development
U.S. Environmental Protection Agency
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Visuals follow. Please contact the speaker for more information.

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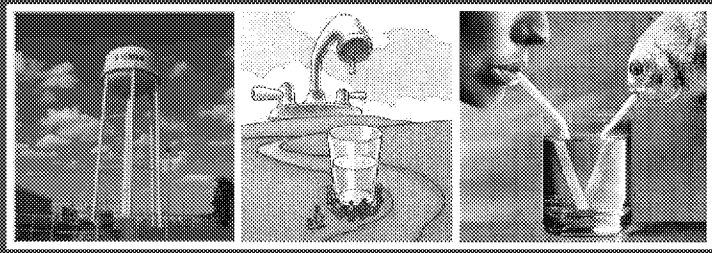
EPA United States Environmental Protection Agency

USGS Science for a changing world

Per- and Polyfluoroalkyl Substances in Source and Treated Drinking Waters of the United States

Presenter- Susan T. Glassmeyer, US Environmental Protection Agency



The views expressed in this presentation are those of the authors and do not necessarily represent the views or policies of the U.S. Environmental Protection Agency.

This information is preliminary, and is subject to revision. It is being provided to meet the need for timely best science. The information is provided on the condition that neither the U.S. Geological Survey nor the U.S. Government shall be held liable for any damages resulting from the authorized or unauthorized use of the information.

EPA United States Environmental Protection Agency

What I hope you leave with

USGS Science for a changing world

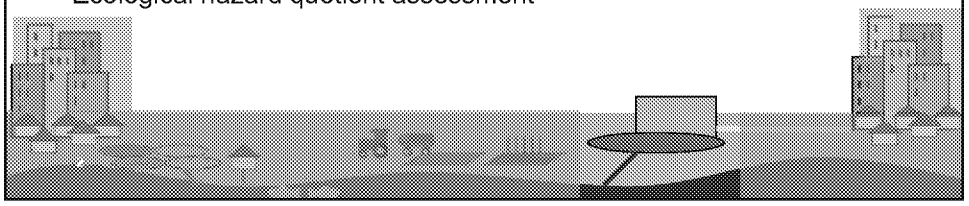
PFAS results in USEPA/USGS collaboration of contaminants of emerging concern (CECs) in source and treated drinking water

- Chemical concentration trends
- PFAS occurrence patterns in two river systems
- Source investigation via *de facto* reuse modelling
- Removal during drinking water treatment
- Role of granular activated carbon (GAC) during treatment
- Examination of data in relation to the third round of the unregulated contaminant monitoring rule (UCMR 3)

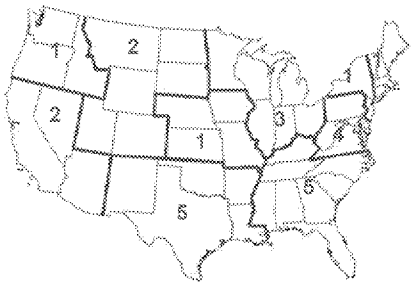
CECs in Untreated and Treated Drinking Water

- Two phase study- PFAS in Phase II only.
- Source and treated drinking water paired grab samples from 25 locations

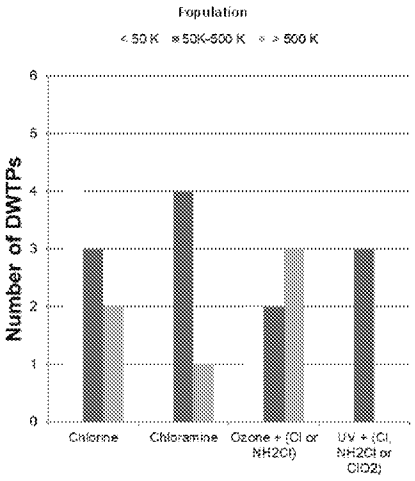
- 247 chemical and microbial analytes
- ~ 70% of analyses were quality assurance/ quality control samples
- Bioassay for estrogenic activity
- Human health margin of exposure assessment
- Ecological hazard quotient assessment



Location Information



Number of Phase II sampling sites in each USEPA Region



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247 Analytes

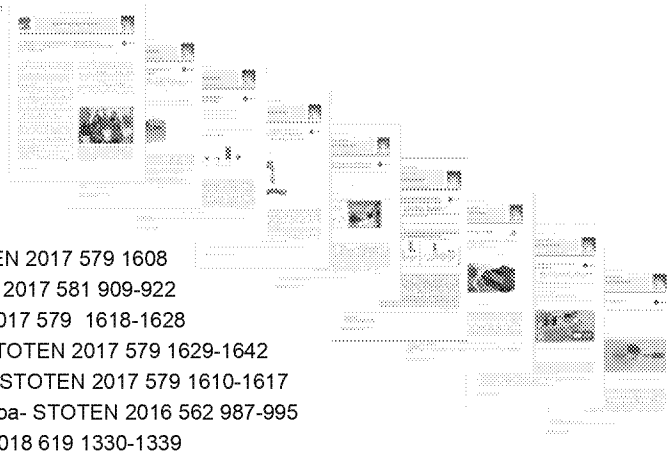
USGS science for a changing world

- 112 prescription and nonprescription pharmaceuticals and their metabolites
- 9 hormones
- 40 metallic and nonmetallic trace elements
- 17 per- and polyfluoroalkyl substances (PFAS)
- 5 viruses
- 4 bacteria
- 3 fungi
- 2 protozoa
- 10 industrial chemicals
- 10 fragrances
- 9 polycyclic aromatic hydrocarbons
- 7 pesticides
- 7 detergent-related chemicals
- 5 household chemicals
- 4 plant and animal sterols
- 3 phosphorus-based flame retardants

EPA United States Environmental Protection Agency

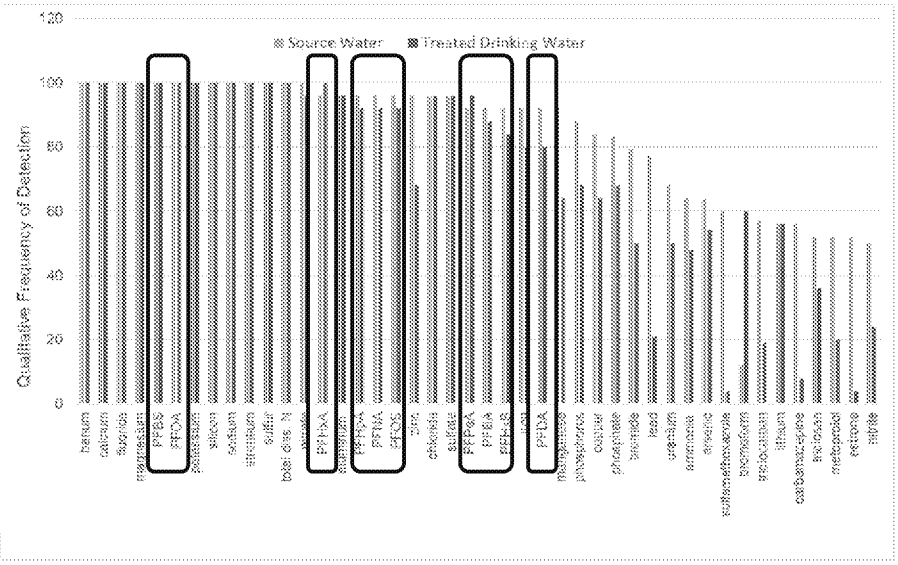
Products

USGS science for a changing world



- Introduction- STOTEN 2017 579 1608
- Overview- STOTEN 2017 581 909-922
- QA/QC- STOTEN 2017 579 1618-1628
- Pharmaceuticals- STOTEN 2017 579 1629-1642
- Estrogen Bioassay- STOTEN 2017 579 1610-1617
- Bacteria and Protozoa- STOTEN 2016 562 987-995
- Viruses- STOTEN 2018 619 1330-1339
- Human Health- STOTEN 2017 579 1643-1648
- Aquatic Health- STOTEN 2017 579 1649-1657
- PFASs- STOTEN, submitted, Aug, 2018

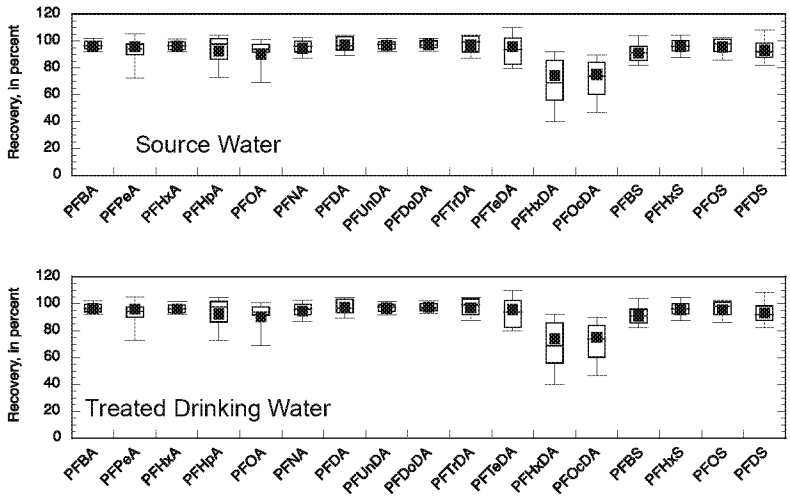
Common CECs



PFAS Methodology

- Boone et al., J. Chrom. A, 2014
- 250 mL unfiltered sample for both source and treated drinking water
- Buffered with Trizma ® pre-set crystals to pH of approximately 7.0 and then buffered using citric acid buffer to approximately pH 4
- Solid Phase Extraction-Oasis® Wax
- Analyzed by liquid chromatography tandem mass spectrometry (LC/MS-MS)
- Lowest Concentration Minimum Reporting Level (LCMRL) 0.032-0.56 ng/L

Laboratory Fortified Matrix (Matrix Spike) Recoveries



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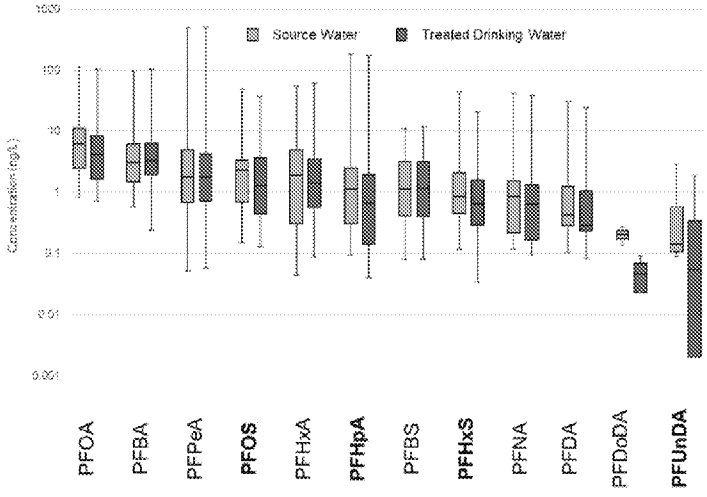
Concentrations



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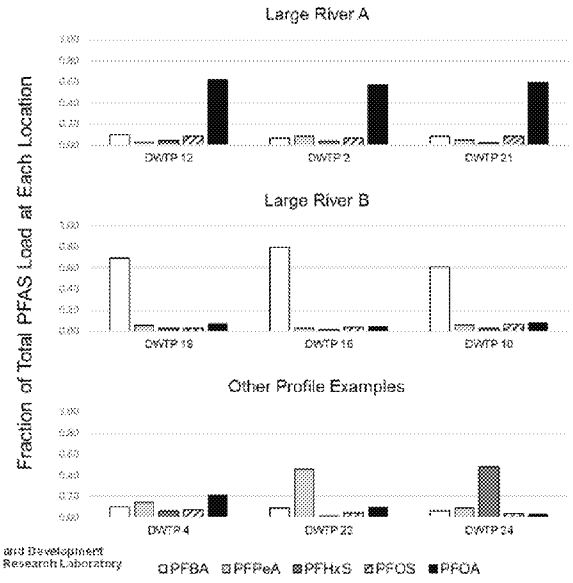
PFAS Patterns in Source Water



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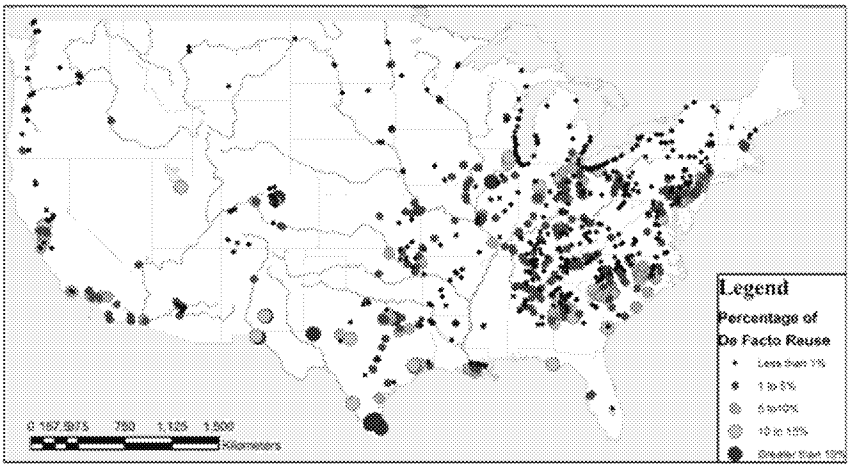
DRINCS Model



Rice et al., ES&T, 2015

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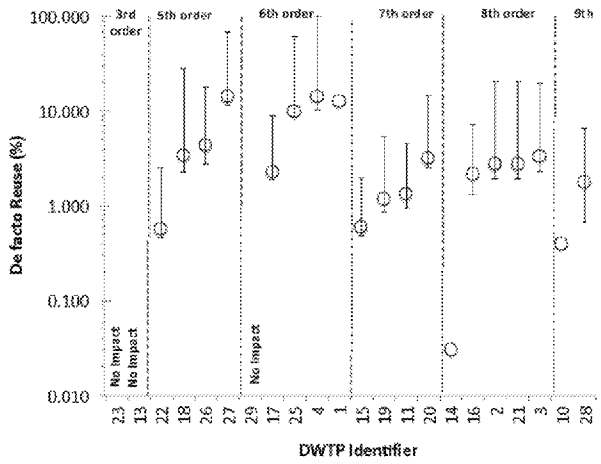
Median *De Facto* Reuse (DFR) Sorted by Stream Order



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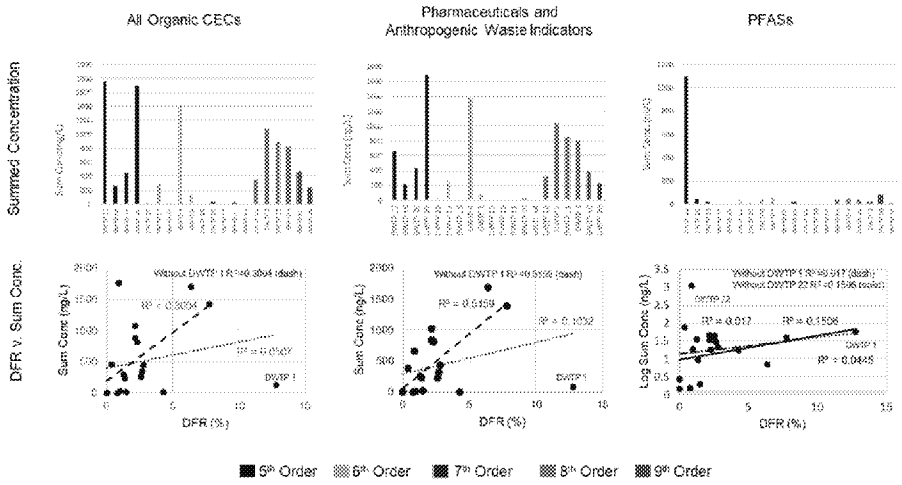
Nguyen et al., JAWWA, 2018

De Facto Reuse (DFR) and Concentration



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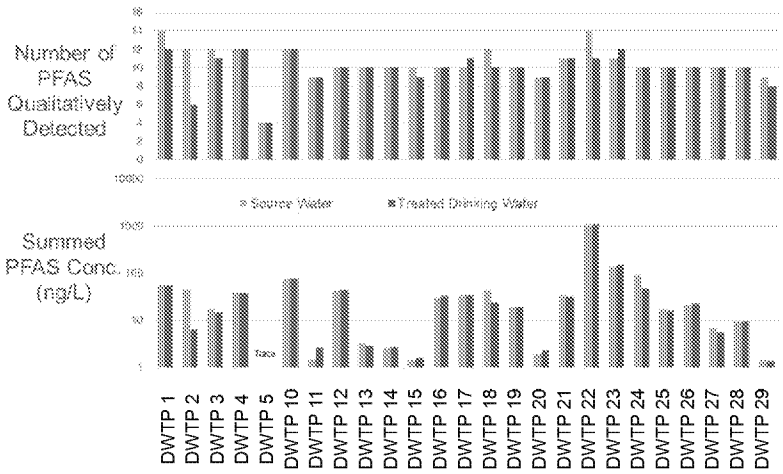
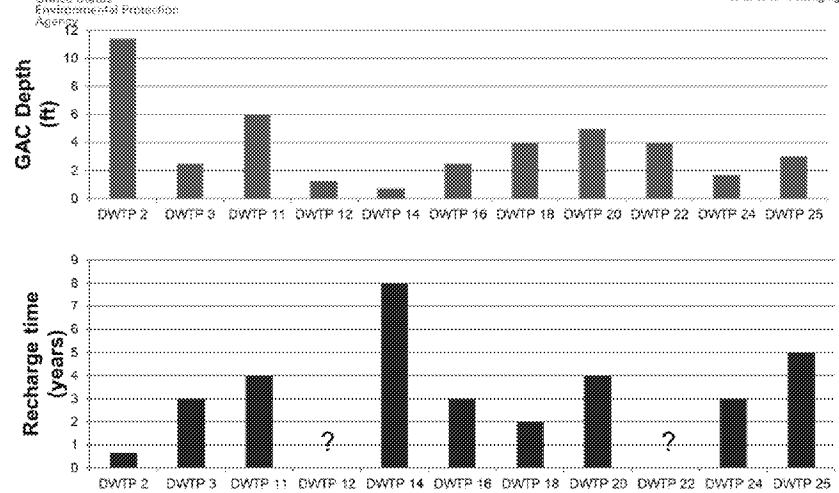
Nguyen et al., JAWWA, 2018

Treatment

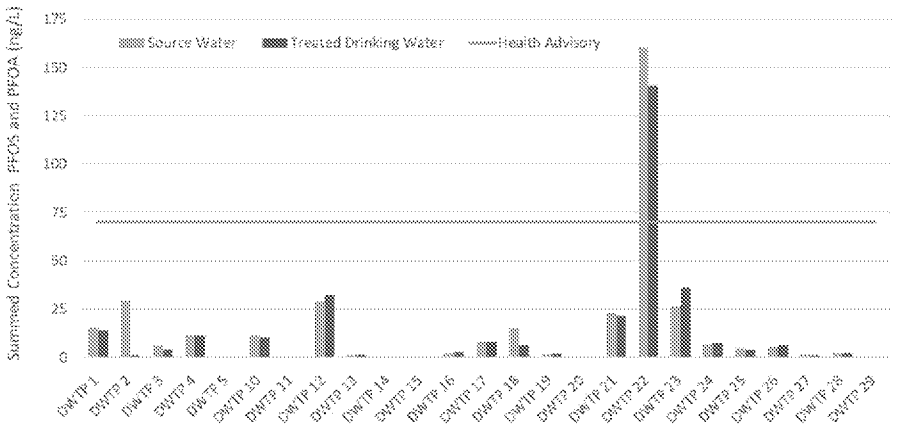


Granular Activated Carbon



Wilcoxon *P*	**0.00**	**0.02**	0.53	0.94	0.73	0.99	**0.00**	0.85	0.37	0.32	**0.04**

Health Advisory Comparison



UCMR v. Phase II PFAS Methods

Criteria	UCMR	Phase II
Intended Use	Potentially Regulatory	Research
Analytes	PFBS, PFHpA, PFHxS, PFNA, PFOS, PFOA	UCMR list + PFBA, PFPeA, PFHxA, PFDA, PFUnDA, PFDoDA, PFTrDa, PFTeDA, PFHxDA, PFOcDA. PFDS
Detection Limit	MRL 10-90 ng/L	LCMRL 0.032-0.56 ng/L

UCMR v. Phase II Data

Analyte	UCMR*			Phase II		
	# DWTPs Sampled	# Detections > MRL	# > Reference Conc**	# DWTPs Sampled	# Detections > LCMRL	# > Reference Conc**
PFOS	4920	95	46	25	20	0
PFOA	4920	117	13	25	19	1
PFNA	4920	14	--	25	22	--
PFHxS	4920	55	--	25	20	--
PFHpA	4920	86	--	25	23	--
PFBS	4920	8	--	25	24	--

*UCMR 3 data from https://www.epa.gov/sites/production/files/2017-02/documents/ucmr3-data-summary-january-2017.pdf

** Reference Concentrations 70 ng/L for PFOS, PFOA, or PFOS + PFOA

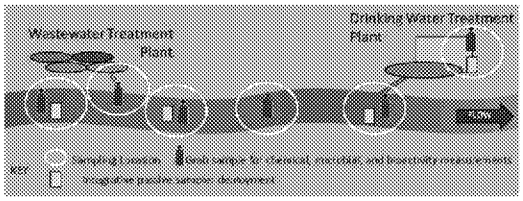
UCMR 3 Measurements at Phase II Locations

PFAS	Number Above LCMRL or MRL in both Phase II and UCMR 3	Number of Phase II Measurements Above UCMR 3 MRL but Reported as Non-Detects in UCMR 3	Number of Phase II Measurements Below UCMR 3 MRL	Not Detected in both Phase II and UCMR 3
PFBS	0	0	24	0
PFHpA	1	1	20	2
PFHxS	0	1	19	4
PFNA	0	1	21	2
PFOA	1	2	21	0
PFOS	0	0	22	2
Totals	2	5	127	10

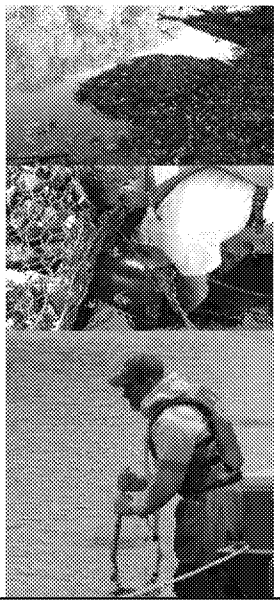
Take Home Messages

- Twenty-five paired source and treated drinking waters were sampled.
- All 50 samples had detectable PFAS; one treated drinking water sample exceeded health advisory guidelines.
- Distinctive PFAS patterns were observed for two large river systems.
- PFAS not as strongly linked to *de facto* reuse percentage as other organic CECs. Non-wastewater sources?
- Minimal removal during drinking water treatment; GAC depth and recharge rate may play a role in removal.
- Detection frequencies higher in Phase II relative to UCMR 3.

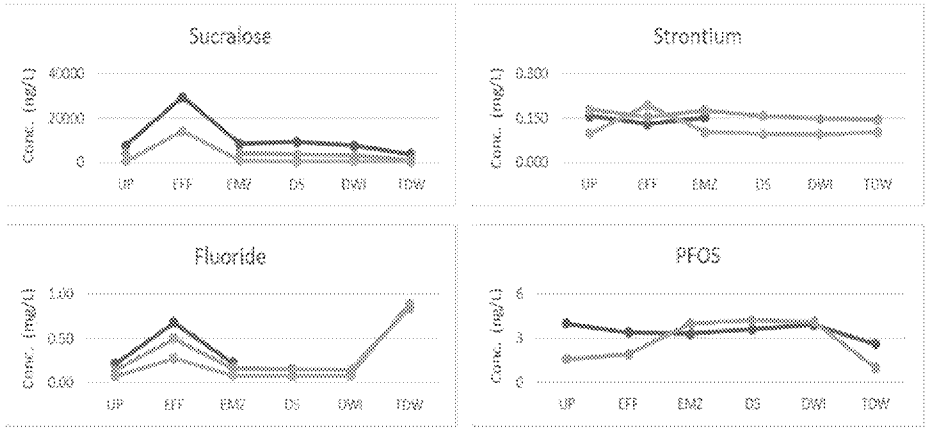
Ongoing Work
CECs During *De Facto Reuse*



- Goal: examine the occurrence, fate, and transport of CECs as they travel from WWTP into DWTP.
- Sampling plan: collect residence-time-weighted samples to analyze for chemicals, microorganisms, and bioactivity.
- One stream reach
- Three sampling events (Oct 2014, April 2015 and Aug 2015)
- Six sampling points



Concentration Distributions Across Stream Reach



Co-PIs

Phase II PFAS

USGS
- Ed Furlong
- Dana Kolpin

USEPA
- Scott Boone
- Bob Benson
- Joyce Donohue
- Susan Glassmeyer
- Jane Ellen Simmons

Phase II and DRINCS

USGS
- Ed Furlong
- Dana Kolpin

USEPA
- Angela Batt
- Scott Boone
- Susan Glassmeyer
- Heath Mash
- Kathy Schenck

Academia
- Paul Westerhoff
- Thuy Nguyen
- Jacelyn Rice

Questions and Comments

Q. Angela Preimesberger: What years was the study done?

A. Susan Glassmeyer: For Phase II of this study, the sampling was performed in 2010 to 2012.

Q. Gloria Post: Were the four PFAS detected above the Unregulated Contaminant Monitoring Rule (UCMR 3) reporting limits in your study but not in UCMR 3 all at the same site, or at different sites?

A. Susan Glassmeyer: There were five measurements that were above the UMCR minimum reporting level, but not detected in the UCMR. These took place at three different drinking water treatment plants.

Q. Angela Preimesberger: Did your evaluations consider additive toxicity of PFAS + organic wastewater contaminants + inorganics?

A. Susan Glassmeyer: The drinking water evaluation considered every chemical individually. Mitch Kostich did the aquatic work and I know he works on mode of action a lot of times. I think he looked at every compound individually for this analysis. We are working on the *De Facto* Reuse project that I was talking about at the end of my presentation. Some researchers from the group up in Duluth do a lot of mode of action work. We have already published a paper out of this study looking at metabolomics, so there is more of a mode of action approach to the analysis.

Q. Elizabeth Hedrick: Does the published method you used cover sampling techniques and materials to minimize contamination, since PFAS are in so many different materials?

A. Susan Glassmeyer: Yes, it does. We use high-density polyethylene bottles. At one of our locations (i.e., Utility 10), the utility did not have attached samplers for treated drinking water, so they threw bottles off the banks to avoid contamination while collecting the water. Scott Boone discusses different contamination sources and ways of mitigating them.

C. Angela Preimesberger: I strongly support drinking water studies evaluating mixtures like MDH does.

C. Susan Glassmeyer: That's definitely a point well-taken because you are not drinking these contaminants individually. You are exposed to a mixture of contaminants and that is what is causing the effects.

C. Rich Kapuscinski: Thanks. Well done!

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PFAS-Related Hot Topics

C. Shamima Akhter: This is the PFAS-Related Hot Topics session. Please note that we are still determining the path forward for the workgroup including potential changes in course for workgroup objectives and development of benchmarks. Similar to previous FSTRAC Webinars, this will be a round-robin session. We will be asking you for PFAS-related Hot Topics during the go-around.

- We would like to ask you to provide the PFAS-related Hot Topics that are specific to your state or tribe that might be of interest to other participants. So that we may hear as many hot topics as possible, we ask that each state or tribal agency briefly discuss the two or three topics that are most important to your state or tribe.

We will call on each tribe and state agency registered for this webinar. Each representative will have approximately two to three minutes to describe their PFAS-related hot topics. To ensure that each tribe and state agency has a chance to describe their PFAS-related hot topics, we kindly ask that you stay on topic. If your topics require a more detailed discussion, please let us know and EPA will follow up with you at a later time. We will include all PFAS-related hot topics in the webinar summary and post it to the FSTRAC SharePoint site after the webinar.

Just as a reminder: Before you speak, please press #6 on your phone to override the force mute.

The following tribes and state agencies were called upon for hot topics:

- Pueblo of Sandia Environment Department
- Lac du Flambeau Band of Lake Superior Chippewa Indians
- Alaska Department of Environmental Conservation

  C. Sally Schlichting: I wanted to discuss what Alaska is doing in terms of setting cleanup levels for six PFAS compounds. In August, we established action levels in groundwater for six PFAS, five of which we use the EPA HA to represent the action levels that would determine when we would require an alternative drinking water source be provided or treatment. That was for perfluoroheptanoic acid (PFHpA), PFHxS, PFNA, PFOS and PFOA, and that was set at 70 parts per trillion (ppt). A separate value of 2 parts per billion (ppb) was set for PFBS. We then elected to move to a regulatory package that is now out for public comment to set actual cleanup levels in groundwater:

  https://dec.alaska.gov/spar/regulation-projects/pfas-cleanup-level-amendments/

  The cleanup levels in groundwater are the same as those action levels, with the exception of PFBS. We are instead using a value of 400 micrograms per liter (µg/L), referencing an existing Provisional Peer-Reviewed Toxicity Value (PPTRV) for that compound. Otherwise, we are setting the summed value of 70 ppt (0.07 µg/L) for the other five PFOS compounds. In addition, we are setting cleanup levels in soil for all six of those compounds. This is a new set of cleanup levels. We had previously set cleanup levels only for PFOS and PFOA.

- California Department of Toxic Substances Control

- California Environmental Protection Agency (Elaine Khan)

  C. Elaine Khan: It's not really a hot topic but more of an FYI. California has adopted interim notification levels for PFOA and PFOS based on the New Jersey numbers and we are in the process of coming up with a final recommendation for those levels. We are also looking into developing notification levels for other PFAS, as needed, and depending on the availability of data.

- Connecticut Department of Environmental Protection

- Connecticut Department of Public Health

- District of Columbia Department of Energy & Environment

- Idaho Department of Environmental Quality

  C. Norka Paden: The Idaho Department of Environmental Quality started a PFAS workgroup in August of this year. This workgroup includes staff from several programs in our state agency. We have met twice so far. The objectives of the workgroup are to identify contaminated sites, identify mitigation strategies, and to develop a communication plan.

- Indiana Department of Environmental Management

  C. Eileen Hack: We are currently in the investigatory phase of PFAS, but we do not have confirmed PFAS "hot spots" to report at this time. Our UCMR monitoring did not find detections in any of the public water supplies that were evaluated. Some of our military bases have found detections and they are in the process of investigating those detections and trying to determine nature and extent. So, we're still in the investigatory phase for groundwater. We've done some sampling for fish tissue and we are in the second year of doing that. We have found some levels but not widespread. So, we're still in the beginning stages.

  - One hundred four Indiana public water supply utilities participated in EPA's UCMR 3. Only one facility detected any of the six perfluorinated compounds monitored (PFOS at 78 ppt and PFHxS at 65 ppt). The public water supply utility that detected PFAS is a purchase water system and is last in the line of three connected public water utilities, none of which detected PFAS during the same UCMR sampling. Indiana Department of Environmental Management's (IDEM's) follow up sampling did not detect PFAS, and these results were considered an anomaly.
  - IDEM has prioritized a list of source areas. IDEM has collected and analyzed fish tissue samples from a limited number of sites that are downgradient of suspected source areas (sampling completed in 2017, and underway for 2018). The IDEM Brownfields program is using 128(a) grant funding in 2019 to analyze soil and ground water samples at Indiana Brownfield sites.

- Department of Defense (DoD) facilities located in Indiana are actively sampling soil/ground water/surface water near potential source areas and analyzing them for PFAS. Preliminary reports note releases of PFAS to various media near fire training areas. Additional investigations to determine the nature and extent of these releases, and potential completed exposure pathways, are underway.

- Iowa Department of Natural Resources

- Kansas Department of Health and Environment

  C. Jaime Gaggero: Much like what Eileen Hack from IDEM mentioned, Kansas is in the beginning stages. We did have one site at Fort Leavenworth that had detects for PFOS that exceeded the HA limits, so they are no longer using their groundwater supply. They are using the city of Leavenworth's water supply for their base. We did have one community in our state that had a detect under UCMR 3. Right now, we are in the process of formulating a stakeholder group to help us develop a monitoring plan for finished drinking water sources only. We haven't had our first meeting yet but it's a pretty diverse group of stakeholders. I know other states have already developed and implemented their own investigative plans to help identify how prolific this is. If there are any states out there that have monitoring plans that they would be willing to share, please contact me at jaime.gaggero@ks.gov.

- Kentucky Division of Water

- Louisiana Department of Environmental Quality

- Maine Center for Disease Control & Prevention

  C. Tom Simones: We have two PFAS water-related hot topics here in Maine at the moment. First, we've been developing a data-driven approach to calculate an RSC for PFOA and PFOS based on the latest National Health and Nutrition Examination Survey (NHANES) biomonitoring data. This approach is similar to what Minnesota presented by using the one compartment pharmacokinetic model that is used in the EPA HAs to calculate a human equivalent dose based on NHANES serum data. Comparing to the EPA HA of 20 nanograms per kilogram per day (ng/kg/day) using average serum levels, we are getting calculated RSCs greater than 80 percent, so we would most likely apply a ceiling of 80 percent there. We've also looked at summing several PFAS using this method and subtracting out background exposure for multiple PFAS, and the resulting RSC is still greater than 80% when using the EPA 20 ng/kg/day RfD for PFOA or PFOS. We've also looked at using the upper percentile (95th percentile) serum level and again compared this to the EPA HA RfD; the RSC is still greater than 80 percent, so again we've used the 80 percent ceiling there. Based on the potential for lower RfDs (e.g., draft ATSDR Minimum Risk Levels [MRLs]) we've done a sensitivity analysis. It's not until the RfD is around 4 ng/kg/day that an RSC would be less than 80 percent when using average PFAS serum levels. That's something that we've been working on recently for PFOA and PFOS particularly.

  Secondly, we're in the process of developing site-specific screening levels for several PFAS in water used for gardening. We're aware of some of the work that Minnesota has

done on this; however, we don't have any data on PFAS levels in the garden produce itself, so we've gone back to the literature. We're trying to assess this exposure scenario through water-to-plant transfer factors from some studies in literature. If anybody has done any work on this, we'd certainly appreciate hearing about screening levels for garden PFAS levels.

- Massachusetts Department of Environmental Protection

  C. Diane Manganaro: Within the Massachusetts Department of Environmental Protection (DEP), our toxicologists are in the process of evaluating the ATSDR MRL documents and trying to determine if and how to reflect the information from those documents in our state drinking water guidance for PFAS. If any other states and/or EPA are in the process of doing this, we'd be interested in hearing from them.

  We are also anxious to know when the National Toxicology Program (NTP) will be releasing their chronic and other PFAS study data.

  Lastly, we are interested in EPA's projected schedule for the release of their toxicity values and drinking water guidance information for PFBS and GenX.

  C. Shamima Akhter: As Jamie and Betsy mentioned, the PFBS and GenX toxicity values will be released in the coming weeks. We will let you know as soon as they are released.

- Minnesota Department of Health

  C. Helen Goeden: This summer, the Minnesota Department of Health (MDH) had a court settlement with 3M a day or two before the trial was scheduled to start. If anyone is interested in this, please click on the link to the Minnesota Pollution Control Agency who, along with the Department of Natural Resources, is working on that settlement (https://www.pca.state.mn.us/waste/3m-and-pfcs-2018-settlement). People can find information on how that court settlement is being dealt with and the workgroups and the activities that are happening as a result of that settlement.

  MDH is involved in expanding private well sampling. Hydrologically, these compounds are interesting because groundwater impacts surface water, but we have areas where surface water is also impacting groundwater. We are expanding our sampling in the East Metro to delineate the impact of surface water to groundwater transport of PFAS. Ginny Yingling (Virginia.yingling@state.mn.us) is the contact person. If anyone is interested in talking about the interesting unique hydrological behavior of these chemicals, please contact her.

- Minnesota Pollution Control Agency

- Mississippi Department of Environmental Quality

- Missouri Department of Health and Senior Services

- Nebraska Department of Health & Human Services

- New Hampshire Department of Environmental Services (Brandon Kernen)

  C. Brandon Kernen: Back in May 2016, New Hampshire adopted an enforceable waste cleanup standard and an enforceable drinking water standard (but not a Maximum Contaminant Level [MCL]) for combined PFOA and PFOS of 70 ppt, consistent with EPA's HA. We've integrated this into all of our regulatory programs. Hundreds of sources of public water supply have been sampled. Our nonpetroleum waste sites have mostly incorporated this into their sampling schedule. We've done assessments on landfills and on landfill leachate, at fire departments and done some broad sampling of wastewater, sludge/biosolids, and surface water. If anyone is interested in occurrence information, we can share it with you.

  Recently our legislature passed a new law that's requiring our agency to initiate rulemaking for MCLs for PFOA, PFOS, PFNA and PFHxS. In that rulemaking process, we have to consider the health effects, technical feasibility and financial costs and benefits. We have to propose our rules and have them written up by January 1, 2019, and submitted to the legislature. We are certainly interested in any information from other states on quantifying the benefit of increased health protection associated with regulating PFAS in drinking water. It's something we haven't found when we've looked for it, and we need to include that type of analysis in our rulemaking.

  A recently enacted state law requires the New Hampshire Department of Environmental Services (NHDES) to regulate air emissions to ensure they do not cause violations of PFAS groundwater standards adopted in New Hampshire. We have a couple of air emission sites that have caused groundwater violations for PFOA. Now in our statute and soon in our rules we have clear criteria for making sure those air emissions don't contaminate groundwater.

  Lastly, a recently enacted state law requires NHDES to develop a plan and budget for developing surface water quality standards for PFAS by January 1, 2020. While it seems like kind of a crazy law that you must develop a plan and budget over the next 18 months or so, the challenge here is that most surface water quality standards that we have adopted to-date have come from EPA guidelines, and EPA hasn't done a lot of work on surface water quality standards at this point for PFAS. So, we need to identify what types of resources we'll need to develop that kind of standard. That's why it's structured that way.

- New Jersey Department of Environmental Protection

  C. Gloria Post: I'm giving an update for all of the programs in New Jersey on four items.

  1. The New Jersey Department of Environmental Protection (NJDEP) adopted an MCL of 13 ng/L for PFNA in September 2018. NJDEP believes that this is the first MCL for a PFAS adopted by any U.S. state.
  2. We have recommended MCLs for both PFOS and PFOA from our advisory body, the Drinking Water Quality Institute (DWQI); these have not yet been proposed as MCLs but are being used as guidance. These are based on extremely thorough literature evaluations. A publication on the basis of the

NJDEP/DWQI PFOS reference dose, which is based on immunotoxicity in mice, has been accepted in *Environmental Research* and is currently online as an accepted manuscript: "Pachkowski et al. (2018). The derivation of a Reference Dose (RfD) for perfluorooctane sulfonate (PFOS) based on immune suppression."

3. The report on a New Jersey statewide screening study of PFAS in fish, sediments, and surface water is final and publicly available. NJDEP has issued PFOS fish consumption advisories based on the data on PFAS in fish from this study. Sampling at additional sites over the next year is planned. The name of the study is "Investigation of Levels of Perfluorinated Compounds in New Jersey Fish, Surface Water, and Sediment (2018). Identification of Perfluorinated Carboxylic Acids (PFCAs) in the Metedeconk River Watershed (February 2016)." Both the full report and a research project summary are posted on the NJDEP Division of Science and Research Website:

   https://www.nj.gov/dep/dsr/publications/Investigation%20of%20Levels%20of%20Perfluorinated%20Compounds%20in%20New%20Jersey%20Fish,%20Surface%20Water,%20and%20Sediment.pdf (Full Report)

   https://www.nj.gov/dep/dsr/research/btmua-pfoa-rps.pdf (Summary)

4. NJDEP is working with EPA's Office of Research and Development and EPA's Office of Water, Office of Science and Technology to review monitoring and analytical methods for PFAS in wastewater.

- New York State Department of Environmental Conservation

  C. Scott Stoner: I wanted to give an update on the work of the New York State Drinking Water Quality Council, which met today. Some of the information that was mentioned here by other states in this go-around was actually flagged and discussed at the council meeting. To give you some background, the New York State Drinking Water Quality Council is a statutorily authorized and derived advisory body of 12 people from state government, academia, water suppliers, and local government charged by statue to recommend MCLs to the New York State Department of Health for PFOA and PFOS and 1,4-dioxane. They also look at additional contaminants of emerging concern. Brandon, your January 1st deadline was mentioned today. We've had several meetings, including today, and we are looking at the toxicity of the three compounds (PFOA, PFOS, and 1,4-dioxane). The plan is that during our next meeting, which will be sometime in November or December, we will make a recommendation for MCLs for those three compounds. I will have further information. If you'd like to see a recorded version of today's meeting, it is available on the New York State Drinking Water Quality Council's webpage: https://www.health.ny.gov/environmental/water/drinking/dwqc/

  I'd also like to note that Dr. Gary Ginsberg whom many of us at FSTRAC have worked with for years retired from the State of Connecticut and is now the Director for the Center for Environmental Health for the New York State Department of Health. It's great to be working with him once again.

- New York State Department of Health

- Suffolk County Department of Environment and Energy, New York
- North Carolina Department of Environment and Natural Resources
- North Carolina Department of Health and Human Services
- Ohio Department of Health
- Ohio Environmental Protection Agency

  C. Audrey Rush: In Ohio, we are in the early stages of a PFAS strategy. We are working with a multi-divisional workgroup involving treatment technologies, source control, remediation, legal issues, outreach, risk messaging, analytical and sampling methods, and monitoring. We're initially focusing on drinking water. We have a couple of sites in Ohio where this has been an issue. Both of them have not had detections over health protective levels in finished water, but they have had pretty high levels in the raw source water. We are hoping to have a response strategy based on a tiered-level approach by the end of the year. We are purchasing an instrument for our lab to analyze PFAS. The big news is that on October 3rd, the City of Dayton filed a federal lawsuit against 3M and other companies that manufacture firefighting foam which we believe is the main cause of their aquifer contamination in the City of Dayton.

- Pennsylvania Department of Environmental Protection
- South Dakota Department of Environment & Natural Resources
- Texas Commission on Environmental Quality
- Vermont Department of Health

  C. Razelle Hoffman-Contois: For operational awareness, I'm going to give a quick overview of an effort that our Department of Environmental Conservation (VTDEC) has been spearheading. The VTDEC is spearheading a project that's analyzing water at schools that have onsite drinking water wells. PFAS can be found in various products that are used in floor maintenance, such as floor cleaning products, stripping chemicals, waxes and polishes. Investigation is underway to see if any of these chemicals could have entered the environment and impacted groundwater potentially due to such uses and subsequent disposal of water that might contain some of these products. In the summer of 2018, there was a pilot project in which VTDEC sampled water at 10 schools with onsite drinking water wells. The investigation of schools with potentially vulnerable offsite drinking water wells continues. The Vermont Department of Health has functioned in a supportive role. If folks would like more information on this project, please click the following link: https://anr.vermont.gov/node/1223

  Also, please click on the following link if you are interested in the Vermont Department of Health drinking water approach for PFAS:

http://www.healthvermont.gov/environment/drinking-water/perfluoroalkyl-and-polyfluoroalkyl-substances-pfas-drinking-water

- Washington State Department of Health

- West Virginia Department of Health and Human Resources

- Wisconsin Department of Natural Resources

  C. Bill Phelps: I have an update on what's going on in Wisconsin. We've had PFAS detects at a number of DoD sites. There are two sites in Marinette, Wisconsin, from a company that produced firefighting foam. They also did testing and firefighting training activities there. They detected 19 PFAS compounds there. They also tested the wastewater treatment plant effluent in Marinette and had detects up in the hundreds of ppt level. Marinette gets its drinking water supply from Lake Michigan. They looked at the raw water intake and found nothing quantifiable. They had one detect in their distribution system at 4 ppt. There were a couple of creeks that run through the site and they had some detections there. They thought that a groundwater plume was a pathway to the compounds detected in the creeks. The highest concentration we found of any PFAS in the state was of PFHxS which we've seen in high ppb concentrations at a number of sites. The Wisconsin Department of Natural Resources is working on an across-program strategy. We're going to try and identify detection scenarios and come up with responses at public drinking water supply sites.

  Our Wisconsin State Department of Health Services is reviewing PFOA and PFOS toxicity information for possible state groundwater quality standards development.

- Wyoming Department of Environmental Quality

  C. Cherrie Nelson: We are currently working on a project that has several phases. We are inventorying the locations of potential PFAS sites around Wyoming. We'll produce a map based on that. We are looking at fire departments, Air Force bases, refineries, and used or active defense sites, as well as landfills, and wastewater and biosolids application sites. From this map, we'll prioritize sampling sites, develop a sampling plan, and go out and sample. We'll work with our water quality laboratory to build PFAS capacities and go on from there. I've heard a rumor that we are going to be setting standards and we are discussing that.

C. Angela Preimesberger: There was an important meeting of the U.S. House of Representatives Subcommittee on September 6th on PFAS. Full transcripts and video are available online. Thanks!

C. Shamima Akhter: Thank you all for joining us today, and we also hope to see the same participation in the next webinar. As we mentioned, we will post all the presentations, hot topics, and the meeting summary to the SharePoint site and let you know when they are there. We will provide you the link and log-in information to view the files. Thank you so much, and goodbye.

Appendix A.

FSTRAC Webinar Registration List

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Appendix B.

FSTRAC Webinar Speaker Bios

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1. **HECD Accomplishments and Workplan for FY 2019 – Elizabeth (Betsy) Behl, EPA/OW**
   Elizabeth (Betsy) Behl is the Director of the Health and Ecological Criteria Division (HECD) in the Office of Science and Technology in the Office of Water at EPA. HECD, is responsible for the national Water Quality Criteria program under the Clean Water Act (CWA), and science support for national primary drinking water regulations under the Safe Drinking Water Act (SDWA). CWA support includes development of national Ambient Water Quality Criteria (304(a)) to protect aquatic life and human health (including recreational uses) from nutrients, toxic substances and microbial contaminants. SDWA support includes development of non-regulatory Health Advisories and Benchmarks containing health effects information on protective levels of pollutants in drinking water. HECD provides OGWDW with support for regulatory activities under SDWA including the six-year review of regulated contaminants, regulatory determinations, the unregulated contaminated monitoring rule, and the candidate contaminant list. In addition, HECD supports state development of biocriteria programs, and support for biological evaluations of endangered species assessment.

2. **EPA Biosolids Program – Elizabeth Resek, EPA/OW**
   Elizabeth (Liz) Resek is the Environmental Protection Agency's (EPA's) Office of Science and Technology (OST) Biosolids Lead. In that capacity she manages the implementation of Clean Water Act requirements that include the identification and risk evaluation of pollutants in biosolids. Before coming to OST, Liz was a Branch Chief within EPA's Office of Resource Conservation and Recovery (ORCR) where she helped redirect program efforts from waste management to sustainable materials management (SMM). She also managed Agency-wide sustainability initiatives, SMM international efforts, and lifecycle assessment activities. Prior to ORCR, she was the Deputy Director for EPA's Office of Science Coordination and Policy within the Office of Chemical Safety and Pollution Prevention and oversaw office operations and led efforts to develop novel community-based risk assessment tools for tribal communities. Liz has worked in several other federal agencies including the Federal Emergency Management Agency and the U.S. Geological Survey; as a private consultant; and as a chemist for a pharmaceutical company. She has an M.S. in Chemistry from the University of Maryland.

3. **Overview of PFAS Groundwater Contamination and Derivation of Health-based Guidance in Minnesota – Helen Goeden, Minnesota Department of Health**
   Dr. Helen Goeden is a senior toxicologist and human health risk researcher for the Health Risk Assessment Unit at the Minnesota Department of Health (MDH). Currently, her specific responsibilities include:

   - Toxicological assessment of a wide range of environmental contaminants, including PFAS chemicals, and development of state-wide guidance for groundwater and drinking water;
   - Leadership roles in state and federal workgroups regarding the development, improvement, and integration of risk assessment methods and public health policies that are protective of sensitive or more highly exposed populations (e.g., infants and children); and

- Leading research projects specific to emerging environmental health threats (e.g., alternative methods for providing risk context to chemicals with little toxicity information).

4. **Per- and Polyfluoroalkyl Substances in Source and Treated Drinking Waters of the United States – Susan Glassmeyer, EPA/ORD**
   Susan T. Glassmeyer is a research chemist in the U.S. Environmental Protection Agency's Office of Research Development, National Exposure Research Laboratory. Dr. Glassmeyer earned a Bachelor of Science in chemistry from Xavier University, and a Master of Science in Environmental Science and Doctor of Philosophy degrees from Indiana University. Dr. Glassmeyer's research is focused on contaminants of emerging concern (CECs), both chemicals such as pharmaceuticals as well as microorganisms, in the water cycle. She has coordinated several projects examining the occurrence, fate and transport of CECs in wastewater, surface water, ground water and drinking water.

Message

From: Soares, Barbara [soares.barbara@epa.gov]
Sent: 3/11/2019 3:28:27 PM
To: Strong, Jamie [Strong.Jamie@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]
Subject: Fw: ORD manuscript review request
Attachments: OW Advanced notification tranmital Form Galloway WV OH PFOA and GenX 02-13-2019.docx

OW transmittal form for this manuscript.

From: Lan, Alexis
Sent: Monday, March 11, 2019 11:27 AM
To: Soares, Barbara
Subject: RE: ORD manuscript review request

Hi Barbara, see attached

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From: Soares, Barbara
Sent: Monday, March 11, 2019 11:23 AM
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Subject: Re: ORD manuscript review request

Is there an accompanying transmittal form (example attached) for this manuscript?

Thank you,

Barbara

From: Lan, Alexis
Sent: Friday, March 1, 2019 12:00:02 PM
To: Lowenstein, Zachary; Smith, Bernicel; Metchis, Karen; Corona, Joel; Trombley, Michael; Soares, Barbara; Balasa, Kate; Braverman, Carole
Cc: Tucker, Nicole; Reiley, Mary; Albert, Ryan; Wang, Lili; Holsinger, Hannah
Subject: ORD manuscript review request

Good afternoon Research POCs

OW received an ORD manuscript for review titled **Associations between Disinfection By-Product Exposures and Musculoskeletal Birth Defects** (attached). Will you please let me know if anyone in your OW office or the Regions is interested in reviewing for any policy statements and/or factual errors? Reviews/comments are requested by Thursday March 7th, 2019.

Please let me know if you have any questions or concerns.

Regards,

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Sent: 3/12/2019 1:46:27 PM
To: Soares, Barbara [soares.barbara@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]
Subject: RE: Due March 26 - FW: Advanced Notification - GenX detection methods review - Comments requested by March 25

Not Joyce for this one. Britt and Greg can decide who reviews for the GenX team.

From: Soares, Barbara
Sent: Tuesday, March 12, 2019 7:36 AM
To: Miller, Gregory <Miller.Gregory@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>; Donohue, Joyce <Donohue.Joyce@epa.gov>
Cc: Strong, Jamie <Strong.Jamie@epa.gov>
Subject: Fw: Due March 26 - FW: Advanced Notification - GenX detection methods review - Comments requested by March 25

Another manuscript for review. Would the 18th be feasible to send any comments to Jamie?

Thank you,

Barbara

From: Reiley, Mary
Sent: Tuesday, March 12, 2019 7:24 AM
To: Gallagher, Kathryn; Strong, Jamie; Brady, Catherine; Balasa, Kate; Braverman, Carole; Corona, Joel; Lan, Alexis; Lowenstein, Zachary; Metchis, Karen; Ohanian, Edward; Reiley, Mary; Smith, Bernicel; Smith, Lameka; Soares, Barbara; Trombley, Michael; Tucker, Nicole
Cc: Ow Pub Tracker; vanDrunick, Suzanne
Subject: Due March 26 - FW: Advanced Notification - GenX detection methods review - Comments requested by March 25

Good morning all,

Attached is a new manuscript for review. Please return comments to me, or let me know you won't have any, by March 26.

Thank You!

Mary

From: vanDrunick, Suzanne
Sent: Monday, March 11, 2019 3:46 PM
To: Reiley, Mary <Reiley.Mary@epa.gov>; Braverman, Carole <braverman.carole@epa.gov>
Cc: Frithsen, Jeff <Frithsen.Jeff@epa.gov>; Rodan, Bruce <rodan.bruce@epa.gov>; D'Amico, Louis <DAmico.Louis@epa.gov>; Fleming, Megan <Fleming.Megan@epa.gov>
Subject: Advanced Notification - GenX detection methods review - Comments requested by March 25

Hi Mary and Carole,
Attached are an NHEERL/AED coauthored manuscript, *Analysis of Analysis of HFPO-DA by Liquid Chromatography-Mass Spectrometry (LC-MS): Review of Current Approaches and Environmental Levels,* and accompanying 1-pager. The paper does not articulate or advocate any new policy position; however, given the high profile issue, I'm sending it to you for ANP review.

Please send comments by March 25.

Best regards,
Suzanne

Suzanne van Drunick, Ph.D.
National Program Director for Safe and Sustainable Water Resources
U.S. EPA Office of Research and Development
1200 Pennsylvania Ave, N.W.
Washington, DC 20460

Message

From: Soares, Barbara [soares.barbara@epa.gov]
Sent: 5/23/2019 6:55:05 PM
To: Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]
Subject: Fw: Due 5/28/19, Advanced Notice Review for Gaballah - Developmental toxicity and tissue dose in zebrafish exposed to GenX and PFAS

We have some more time for the review.

From: Brady, Catherine
Sent: Thursday, May 23, 2019 2:24 PM
To: Ow Pub Tracker; Soares, Barbara
Cc: Reiley, Mary; Gallagher, Kathryn; Santell, Stephanie; Lan, Alexis; Tucker, Nicole; Lowenstein, Zachary; Ohanian, Edward
Subject: Re: Due 5/28/19, Advanced Notice Review for Gaballah - Developmental toxicity and tissue dose in zebrafish exposed to GenX and PFAS

Hi Cadmus Team/POCs,

An extension has been granted for Gaballah, the due date is now June 4th by COB. Thank you for your attention to this matter.

Catherine Brady
ORISE Participant
Health & Ecological Criteria Division
U.S. EPA| Office of Water|Office of Science & Technology

From: Soares, Barbara
Sent: Thursday, May 23, 2019 8:29:21 AM
To: Brady, Catherine; Tucker, Nicole; Lan, Alexis; Lowenstein, Zachary; Santell, Stephanie
Cc: Reiley, Mary; Gallagher, Kathryn; Ow Pub Tracker
Subject: Re: Due 5/28/19, Advanced Notice Review for Gaballah - Developmental toxicity and tissue dose in zebrafish exposed to GenX and PFAS

We would like to request an extension for review of this item. Please let me know if possible.

Barbara

From: Brady, Catherine
Sent: Tuesday, May 21, 2019 8:53:27 AM
To: Tucker, Nicole; Lan, Alexis; Lowenstein, Zachary; Santell, Stephanie; Soares, Barbara
Cc: Reiley, Mary; Gallagher, Kathryn; Ow Pub Tracker
Subject: Fw: Due 5/28/19, Advanced Notice Review for Gaballah - Developmental toxicity and tissue dose in zebrafish exposed to GenX and PFAS

Good Morning POCs!

Attached you will a find a new manuscript OST has received. This manuscript came in with a request for an expedited review, if your office has comments or does not have comments please email me by noon on Tuesday, May 28. Thank you and enjoy your day!

Catherine Brady
ORISE Participant
Health & Ecological Criteria Division
U.S. EPA| Office of Water|Office of Science & Technology

From: Ow Pub Tracker <OwPubTracker@cadmusgroup.com>
Sent: Monday, May 20, 2019 2:41 PM
To: Gallagher, Kathryn
Cc: Ow Pub Tracker; Reiley, Mary; Behl, Betsy; Brady, Catherine
Subject: Due 5/28/19, Advanced Notice Review for Gaballah - Developmental toxicity and tissue dose in zebrafish exposed to GenX and PFAS

Hi Kathryn,

OW received the attached manuscript: **Gaballah – Evaluation of developmental toxicity, developmental neurotoxicity, and tissue dose in zebrafish exposed to GenX and other PFAS**, and OW Transmittal Form from ORD for Advanced Notice Review. The subject matter of the manuscript most closely aligns with the work of OST-ERAB. Please coordinate the review of the manuscript across your Office and with the other NWP Research POCs. Catherine Brady would like to know if an expedited review of the manuscript could be completed by noon of **Tuesday, May 28**. The authors have requested an expedited review to meet their deadline for publication. Mary will forward the review to Ed Ohanian and Owen McDonough for clearance and then return the cleared review to ORD.

Please include both Mary, Catherine, and Cadmus on correspondence regarding this review so that the spreadsheet tracking the manuscript reviews can be kept current. Please contact Cadmus and cc Mary and Catherine if you have questions or delays.

Thanks,

Alex Taylor | Research Analyst
The Cadmus Group LLC
3100 Clarendon Blvd, Suite 400 | Arlington, VA 22201
(703) 247-6144

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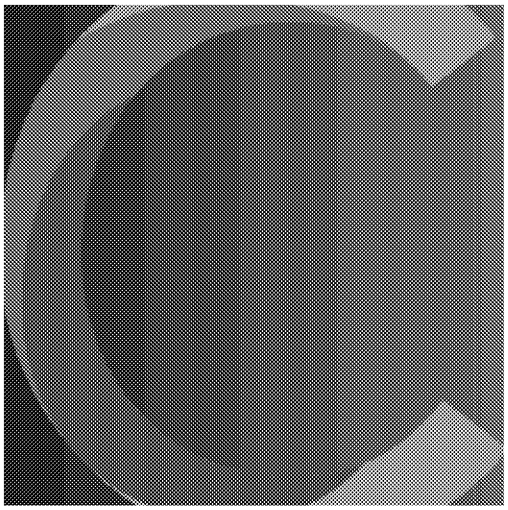

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Message

From: Soares, Barbara [soares.barbara@epa.gov]
Sent: 5/24/2019 2:54:28 PM
To: Jacobs, Brittany [jacobs.brittany@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]
Subject: Re: Due 5/28/19, Advanced Notice Review for Gaballah - Developmental toxicity and tissue dose in zebrafish exposed to GenX and PFAS
Attachments: 20190516_GX1 5-24-19 BS.docx

Brittany,
Attached are my edits and comments. We can coordinate on the ORD transmittal doc when you've had a chance to review.

Barbara

From: Jacobs, Brittany
Sent: Thursday, May 23, 2019 8:42:53 AM
To: Soares, Barbara; Strong, Jamie; Miller, Gregory; Donohue, Joyce
Subject: RE: Due 5/28/19, Advanced Notice Review for Gaballah - Developmental toxicity and tissue dose in zebrafish exposed to GenX and PFAS

I will also review. She presented at SOT and had interesting GenX data.

From: Soares, Barbara
Sent: Thursday, May 23, 2019 8:28 AM
To: Strong, Jamie <Strong.Jamie@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>; Miller, Gregory <Miller.Gregory@epa.gov>; Donohue, Joyce <Donohue.Joyce@epa.gov>
Subject: Re: Due 5/28/19, Advanced Notice Review for Gaballah - Developmental toxicity and tissue dose in zebrafish exposed to GenX and PFAS

Ok. Will do.

From: Strong, Jamie
Sent: Thursday, May 23, 2019 8:27:37 AM
To: Soares, Barbara; Jacobs, Brittany; Miller, Gregory; Donohue, Joyce
Subject: RE: Due 5/28/19, Advanced Notice Review for Gaballah - Developmental toxicity and tissue dose in zebrafish exposed to GenX and PFAS

Please request an extension. That is too quick of a turn around.

From: Soares, Barbara
Sent: Thursday, May 23, 2019 8:23 AM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>; Miller, Gregory <Miller.Gregory@epa.gov>; Donohue, Joyce <Donohue.Joyce@epa.gov>
Cc: Strong, Jamie <Strong.Jamie@epa.gov>
Subject: Fw: Due 5/28/19, Advanced Notice Review for Gaballah - Developmental toxicity and tissue dose in zebrafish exposed to GenX and PFAS

I can take a look at this one but let me know if any of you would also like to review. Aiming to get this to Jamie by this Friday given Memorial Day Weekend.

Thank you,

Barbara

From: Brady, Catherine
Sent: Tuesday, May 21, 2019 8:53 AM
To: Tucker, Nicole; Lan, Alexis; Lowenstein, Zachary; Santell, Stephanie; Soares, Barbara
Cc: Reiley, Mary; Gallagher, Kathryn; Ow Pub Tracker
Subject: Fw: Due 5/28/19, Advanced Notice Review for Gaballah - Developmental toxicity and tissue dose in zebrafish exposed to GenX and PFAS

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Catherine Brady
ORISE Participant
Health & Ecological Criteria Division
U.S. EPA| Office of Water|Office of Science & Technology

From: Ow Pub Tracker <OwPubTracker@cadmusgroup.com>
Sent: Monday, May 20, 2019 2:41 PM
To: Gallagher, Kathryn
Cc: Ow Pub Tracker; Reiley, Mary; Behl, Betsy; Brady, Catherine
Subject: Due 5/28/19, Advanced Notice Review for Gaballah - Developmental toxicity and tissue dose in zebrafish exposed to GenX and PFAS

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Please include both Mary, Catherine, and Cadmus on correspondence regarding this review so that the spreadsheet tracking the manuscript reviews can be kept current. Please contact Cadmus and cc Mary and Catherine if you have questions or delays.

Thanks,

Alex Taylor | Research Analyst

The Cadmus Group LLC
3100 Clarendon Blvd, Suite 400 | Arlington, VA 22201
(703) 247-6144

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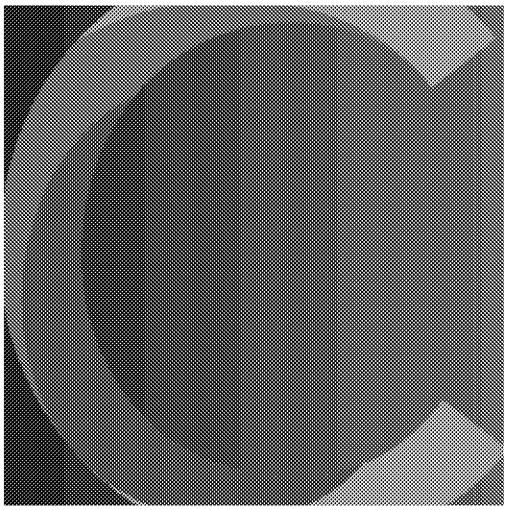

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Summary

Federal-State Toxicology and Risk Analysis Committee (FSTRAC) Webinar

December 5, 2019

"Safe and Clean Water"

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Thursday, December 5, 2019

Welcome and Introduction.....**Shamima Akhter,** OW/EPA

HECD Accomplishments and Workplan for FY 2020 ..... **Betsy Behl,** OW/EPA

Michigan Taking Action on PFAS ..... **Steve Sliver,** Michigan PFAS Action Response Team

Development of Draft Human Health Benchmarks for
Pharmaceuticals in Drinking Water.....**Colleen Flaherty,** OW/EPA

The Effect of DBP Exposures on the Risk of Congenital Anomalies and Fetal Growth
Restriction: New Epidemiological Study Findings..... **J. Michael Wright,** ORD/EPA

Basis of States' Drinking Water Guidelines for PFAS..... **Gloria Post,** New Jersey Department of Environmental Protection

Hot Topics.....**State and Tribal Attendees**

Appendix A. FSTRAC Webinar Registration List

Appendix B. FSTRAC Webinar Speaker Bios

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Welcome and Introduction

Dr. Shamima Akhter from the Office of Science and Technology's Health and Ecological Criteria Division (OST/HECD) in the U.S. Environmental Protection Agency (EPA) Office of Water (OW) welcomed everyone in the room and on the telephone to the Fall 2019 Federal-State Toxicology and Risk Analysis Committee (FSTRAC) webinar.

Dr. Akhter announced that approximately 80 FSTRAC members had registered for the webinar. Currently, there are 253 FSTRAC members; 14 new members have joined FSTRAC since the last webinar held in spring 2019. She noted that, for today's webinar, there would be five presentations to be followed by a round-robin state and tribal hot topics session during which states and tribes are encouraged to briefly introduce their hot topics.

Dr. Akhter went over the features of the webinar. She noted that all audience phone lines were muted to reduce the likelihood of background noise and other distractions. Dr. Akhter invited audience members with comments or questions for the presenters to type in the chat box located on the right side of the screen and click the send icon. She explained that, time permitting, questions would be posed to the presenters at the end of each presentation. Dr. Akhter invited anyone with technical problems during the webinar to please inform the leaders by typing in the same chat box. People whose computers did not support streaming audio were provided with the option of calling in to the conference line to listen to the webinar. For those participants preferring to call in, a call-in number and code were provided in the notes box on the right side of the screen. Calling into the conference line was not required for most users. Dr. Akhter also noted that using both the computer speakers and the phone line will create an echo. She mentioned that the presentations and meeting summary would be posted to the FSTRAC SharePoint site after the webinar. If participants had any additional questions for the speakers, Dr. Akhter asked the participants to please contact the speakers directly.

Dr. Akhter introduced the first speaker, Ms. Betsy Behl, the Director of HECD in EPA OST. Ms. Behl gave a presentation titled "HECD Accomplishments and Workplan for FY 2020."

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HECD Accomplishments and Workplan for FY 2020

Elizabeth (Betsy) Behl
U.S. Environmental Protection Agency, Office of Water
Office of Science and Technology, Health and Ecological Criteria Division
202-566-0788
behl.betsy@epa.gov

Visuals follow. Please contact the speaker for more information.

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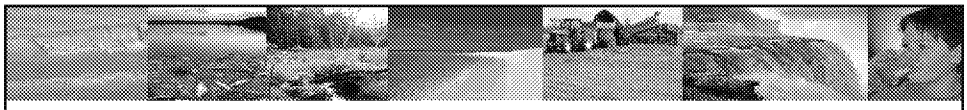
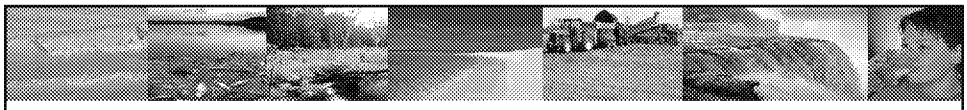


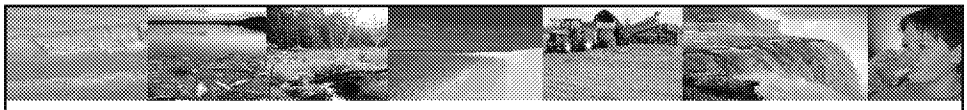
HECD Accomplishments and Workplan for FY 2020

Betsy Behl, Director
Health and Ecological Criteria Division
Office of Science and Technology, Office of Water
U.S. Environmental Protection Agency
FSTRAC Meeting
December 5, 2020



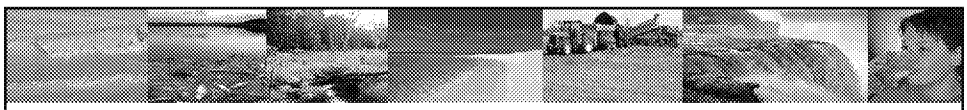
Overview

- Accomplishments 10/18 – 9/19
- 2020 Priorities



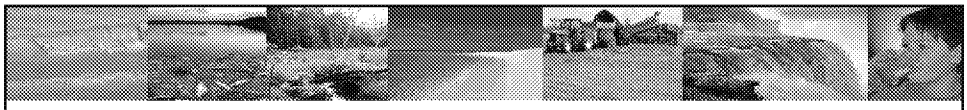
Accomplishments in FY2019

- Aquatic Life
  - Metals CRADA: Posted 5-yr workplan and 1 year progress report
  - Draft scoping document on updates to guidelines for aquatic life criteria
  - Developed proposed Se protective value for aquatic-dependent wildlife for CA
  - Published final updated aluminium aquatic life 304(a) criteria recommendations
  - Held a Frequency and Duration experts workshop
  - Supported state aquatic life criteria development efforts and regional efforts to develop BEs for ESA consultation
- Biosolids
  - Met statutory requirements to develop Biennial Review (pub. Dec 2020)
  - Addressed actions identified in OIG biosolids report
  - Revised website (under management review)
  - Continued development of screening model
  - Conducted 3 site visits to resource recovery facilities



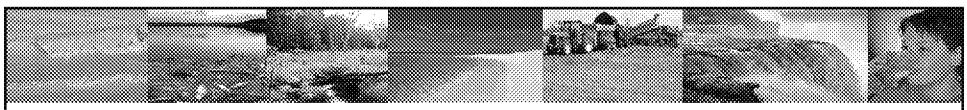
Accomplishments in FY2019

- Nutrients
  - Drafted revised nutrient criteria for lakes and reservoirs to address 3 designated uses.
  - Support state nutrient water quality management efforts by providing direct technical assistance to 12 states, 1 territory and 2 tribes.
  - Held 2 national webinars on nutrient science by nationally-recognized scientists.
- Biocriteria
  - Concluded work on Caribbean Coral Reef BCG development
  - Developed draft BCG models for MA Bay and Pacific Maritime Region BCGs
  - Conducted bioassessment program critical elements review in AL
  - Developed a flyer to communicate to states technical support available for BCG and critical element review



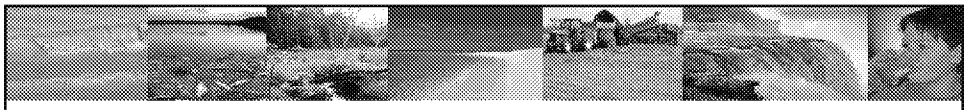
Accomplishments in FY2019

- Human Health
  - Published draft GenX Chemicals Toxicity Values and begin to draft response to peer review comments
  - Published FRN to seek comment on approaches for determination of HABs events of national significance in fresh waters
  - Published updated Cyanobacteria and Cyanotoxins fact sheet for Drinking Water Treatment Operators
  - Updated CyanoHABs website and conducted 4 national HABs webinars
  - Drafted approach for Human Health Benchmarks for Pharmaceuticals
  - Supported development and peer review of perchlorate BBDR model
  - Developed automated approach to establish the chemical "universe" for PCCL5
  - Completed toxicity evaluations supporting proposed RegDet 4, health effects write ups and health effects summary chapters
  - Provided nominations and supporting toxicity assessments for compounds to include in UCMR5



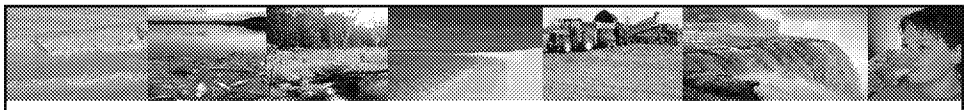
Accomplishments in FY2019

- Human Health
  - Published final Human Health Recreational Ambient Water Quality Criteria and/or Swimming Advisories for Microcystins and Cylindrospermopsin
  - Supported development of the Water Reuse Action Plan
    - Represented OW on Blue Ribbon Commission for Decentralized Water Reuse
  - Authored several papers on Coliphage to support recreational criteria
  - Participated in WHO guideline development efforts
- Updated OW research needs and worked with ORD to finalize 5 Research Plans.



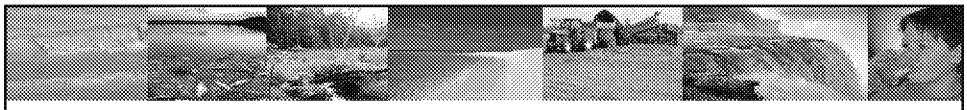
FY2020 Priorities

- Aquatic Life
  - Initiate peer review of modeling approach for metals (CRADA product)
  - Problem formulation for updated chloride/sulfate criteria
  - Problem formulation for PFAS aquatic life criteria
    - Collaboration with DoD on benchmarks
  - Publish revised Missing Parameters document for public comment
  - Hold at least one regional meeting on aquatic life criteria for toxics
  - Publish final frequency and duration expert workshop proceedings
  - Implement Common Effects method for pesticides with OPP
  - Develop path forward for updated Guidelines for Aquatic Life Criteria
  - Continue support to Regions on ESA consultation on aquatic life criteria
  - Continue support to Regions and States on aquatic life criteria



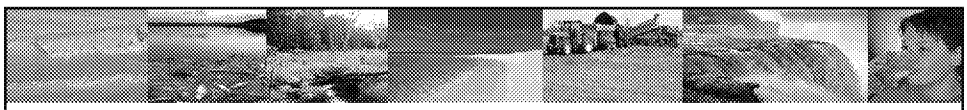
FY2020 Priorities

- Biosolids Program
  - Develop Biosolids Strategic Plan
  - Finalize update of biosolids website
  - Publish Biennial Biosolids Review in 2020
  - Hold Biosolids States meeting
    - Scope a risk assessment for per- and Polyfluoroalkyl Substances (PFAS) in biosolids
  - Initiate National Biosolids webinar series
  - Respond to requests on resource recovery products
  - Make progress on development of assessment tools and risk assessments for chemicals identified in biosolids



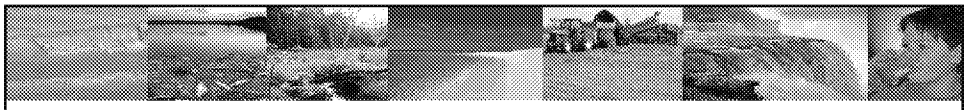
FY2020 Priorities

- Nutrients
  - Publish draft stressor/response-based criteria linking nutrient concentrations in lakes to adverse effects for 3 designated uses.
    - Continue pilots
    - Develop response to public comments
  - Launch NSTEPS on-line as a pilot on cloud.gov
  - Continue review of WQS packages for nutrients
  - Continue support to Regions and States on criteria development for nutrients through NSTEPS
- Biocriteria
  - Conduct critical elements review on GA and NM
  - Finalize communications materials for NE lake regional voucher flora
  - Finalize BCG for MA Bay and Pacific Maritime Region



FY2020 Priorities

- Human Health
  - Finalize GenX toxicity assessment
  - Initiate problem formulation for PFAS human health criteria
  - Draft Recreational Criteria for Coliphage- a viral indicator.
  - Finalize remaining TSDs supporting 2012 recreational criteria
  - Support RegDet4: respond to comments and toxicity support for final
  - Support CCL5: develop TSD for automated approach and make final determinations
  - Support UCMR5: response to comment and toxicity support
  - Develop and update Health Advisories, as identified
  - Support Regions and States on Human Health Criteria and Health Advisories
  - Continue Harmful Algal Blooms research and outreach



Questions?

Contact information:

Elizabeth (Betsy) Behl
Director, Health and Ecological Criteria Division
Office of Science and Technology, Office of Water
USEPA

Email: behl.betsy@epa.gov
Phone: 202-566-0788

Questions and Comments

Q. Jeri Weiss: Do you have a date for the biosolids meeting?

A. Betsy Behl: Not quite yet. I know it will be in March or April 2020, but we are leaning toward March. We will make sure that it is gets advertised through FSTRAC.

C. Betsy Behl: I also wanted to mention something specifically about FSTRAC. We are going to be working this year to plan a face-to-face meeting. The last face-to-face FSTRAC meeting was held about 8 years ago. We will be working with the FSTRAC Steering Committee and you to provide input on an agenda for that.

Q. Elaine Khan: You mentioned completing the GenX assessment in 2020. What about PFBS?

A. Betsy Behl: Our colleagues from EPA's Office of Research and Development (ORD) are working on PFBS. They anticipate completing the PFBS assessment in spring or summer 2020, but we will know more about the actual completion date when we get into calendar year 2020.

Q. Gloria Post: Do you know when the FSTRAC meeting will be held?

A. Betsy Behl: We probably will not be doing that until 2021, but we will work on the agenda for the upcoming FSTRAC meeting this year. We needed to extend the timeline a little bit based on EPA's budget.

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Michigan Taking Action on PFAS

Steve Sliver
Michigan PFAS Action Response Team
517-290-2943
SliverS@Michigan.gov

Visuals follow. Please contact the speaker for more information.

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Michigan Taking Action on PFAS

FSTRAC Webinar
December 5, 2019

Steve Sliver, Executive Director
Michigan PFAS Action Response Team
517-290-2943 | SliverS@Michigan.gov

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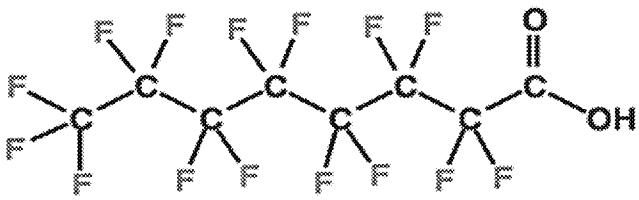


PFOA - perfluorooctanoic acid

Per- and Polyfluoroalkyl Substances (PFAS)

- **Strong carbon-fluorine bonds**
- Surfactants
- Repel water, oil, fat, and grease
- Began developing in 1940s
- 5,000+ compounds today

EGLE

Some Common PFAS Abbreviations

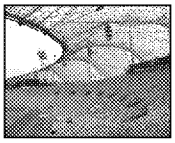
- Perfluorooctanoic acid (PFOA)
- Perfluorooctane sulfonate (PFOS)
- Perfluorononanoic acid (PFNA)
- Perfluorobutane sulfonic acid (PFBS)
- Perfluorohexane sulfonic acid (PFHxS)
- GenX
- …

EGLE

PFAS Uses

Aerospace

Apparel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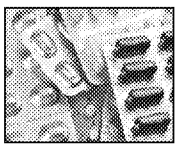
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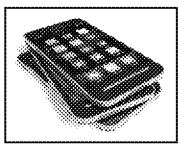
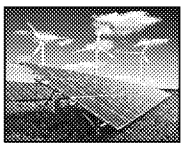
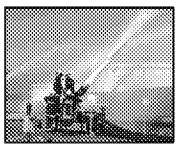

Electronics

Oil & Gas


Energy

Healthcare and Hospitals

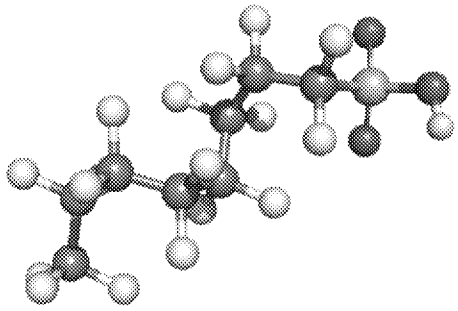

Aqueous Film Forming Foam

Semiconductors

EGLE

Why the Concern?

- Widespread
- Don't break down easily - hard to get rid of
- Bioaccumulative – build up in our bodies
- Some PFAS may affect health
- Lack of information
- Lack of standards



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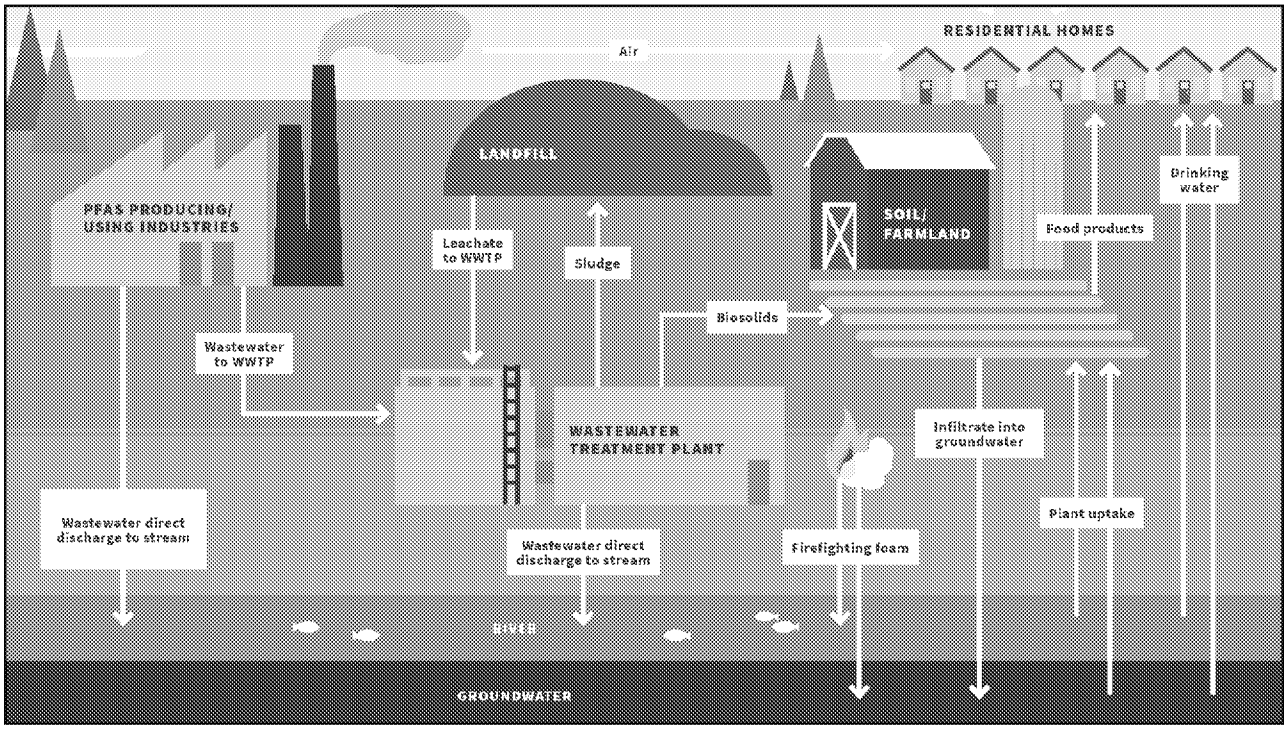

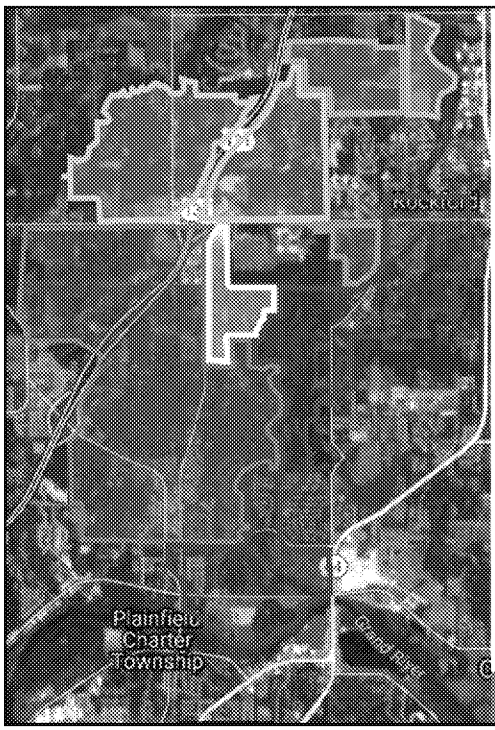

PFAS Emerge in Michigan

- 2012 WAFB "Do Not Eat" fish advisory
- 2013 Surface water survey
- 2017 Camp Grayling sample data
- 2017 North Kent County sample data

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Michigan PFAS Action Response Team (MPART)

- Executive Order 2019-03
- Unique multi-agency approach
- Leads coordination and cooperation among all levels of government
- Directs implementation of state's action strategy

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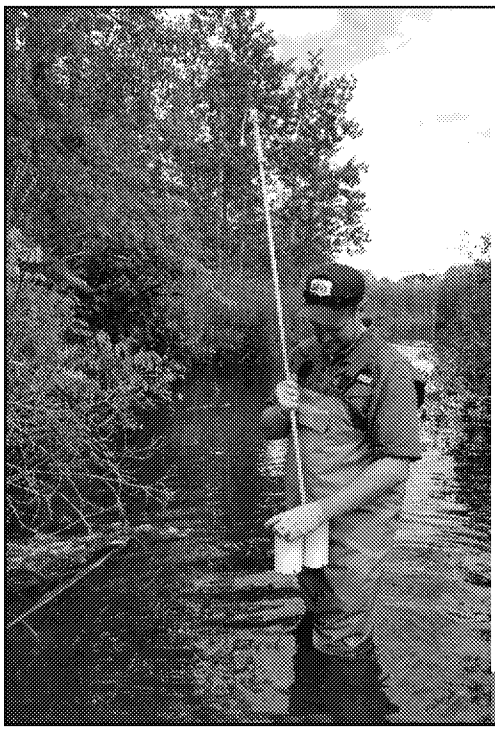
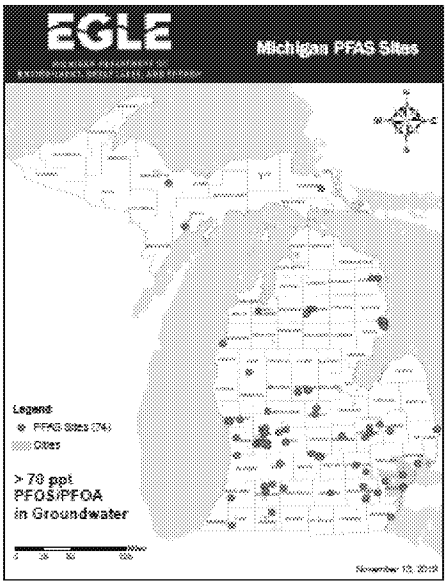


MPART Response

- Protect public health
- Standardize sampling and analytical
- Study occurrence
- Identify sources and source pathways
- Study environmental transport and fate
- Study ecological effects
- Seek input and educate
- Prevent future contamination
- Develop standards

EGLE



Sites Being Investigated

Prioritized investigations based on known or suspected sources, potential for exposure

Protect drinking water pathway

Multiple other investigations underway

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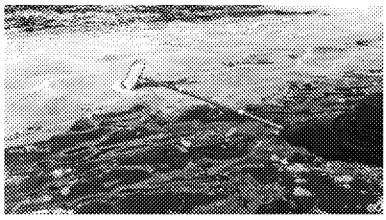
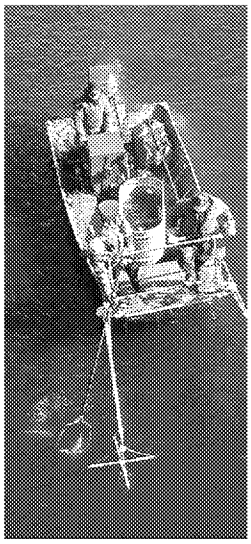
Surface Water Investigations

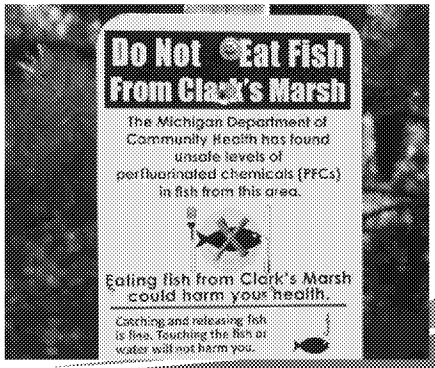
- Survey of surface water and fish
- Foam
- Wastewater





Public Health Advisories

- Fish and deer consumption
  - 9 – 300 ppb PFOS
- Surface water foam



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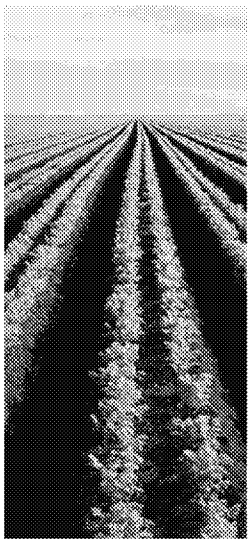
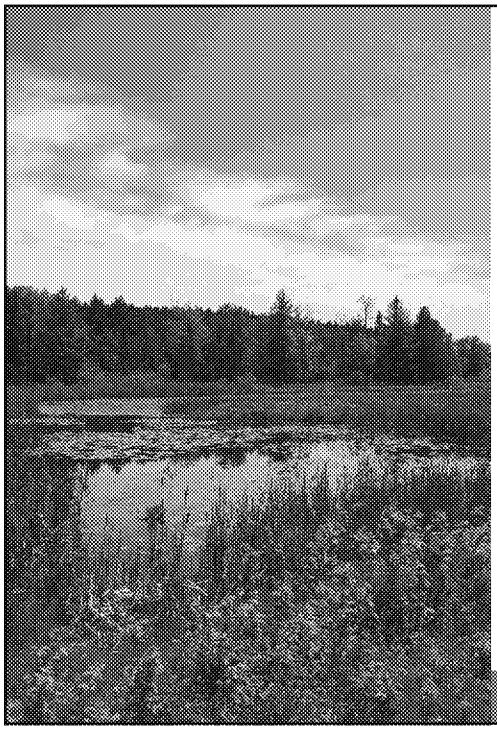
Studies and Research

- Biosolids
- Landfill leachate
- Soil
- Treatment technologies
- Fate and transport





Ecological Studies

PFAS bioaccumulation and risk for fish and wildlife

Movement and environmental risk of PFAS contamination for aquatic organisms

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Public Health Studies

Exposure assessments	Biomonitoring	Health studies	Investigations
• Kent County	• Statewide • Fire fighters	• Kent County • Parchment • Cooper Twp	• Oscoda

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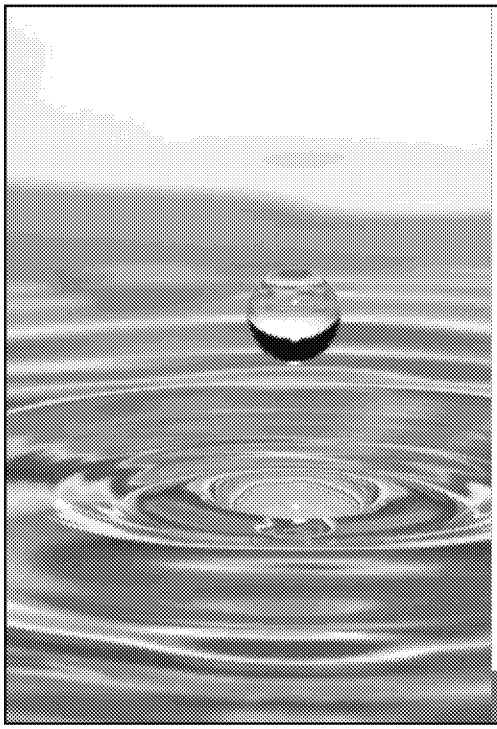

MI Public Water Supply Testing

- Phase I - 2018
  - All community water supplies (1,114)
  - All NTNCWS schools and day cares (619)
  - All Tribal systems (17)
- Phase II - 2019
  - Non-community water supplies (750 total)
    - 237 children's camps
    - 162 medical care facilities
- Monitoring
  - All 65 surface water systems
  - 61 systems > 10 ppt Total Phase I
- Phase III – 2020 under development

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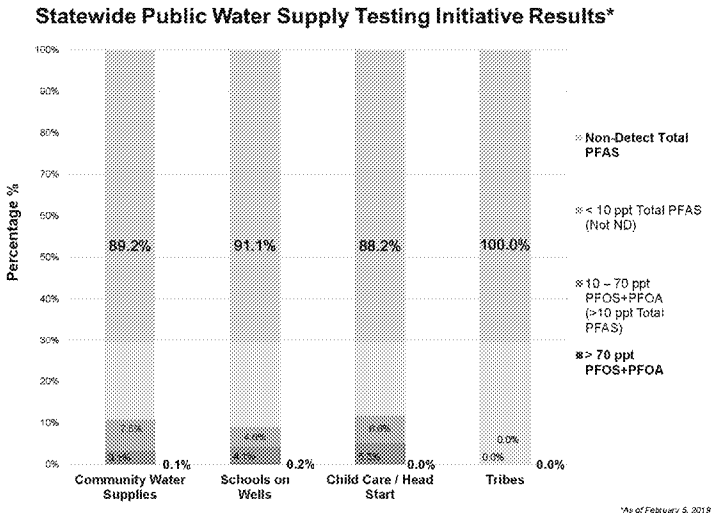
Phase I Results



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MI Standards

Surface water quality
- ✓ 11/12 ppt PFOS
- ✓ 420/12,000 ppt PFOA

Groundwater cleanup
- ✓ 70 ppt PFOA/PFOS
- ✓ GSI per surface water quality standards

Drinking water
- ✓ 70 ppt PFOA/PFOS lifetime health advisory recommendation
- ☐ MCLs

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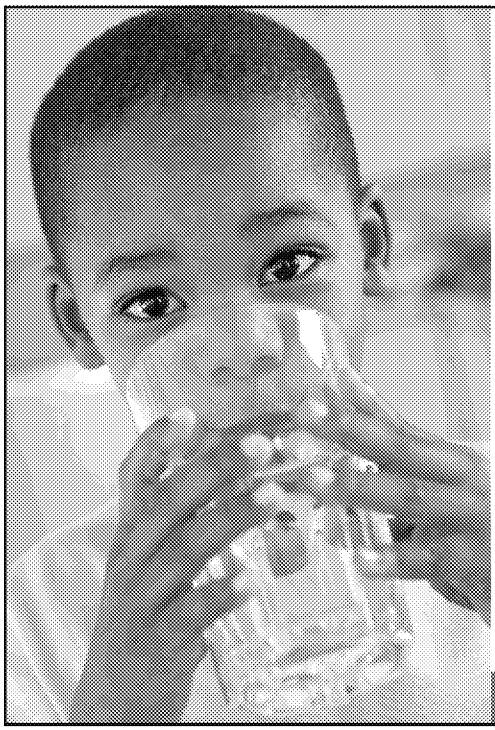

Establishing Drinking Water Standards

- No federal standards on the horizon
- Science Advisory Panel Report, December 2018
  - **70 ppt standard for PFOA/PFAS could be too high**
  - **Other PFAS should be considered as well**
- Michigan's two-step approach
  - **Science Advisory Workgroup recommendations on June 27, 2019**
  - **Rulemaking underway**

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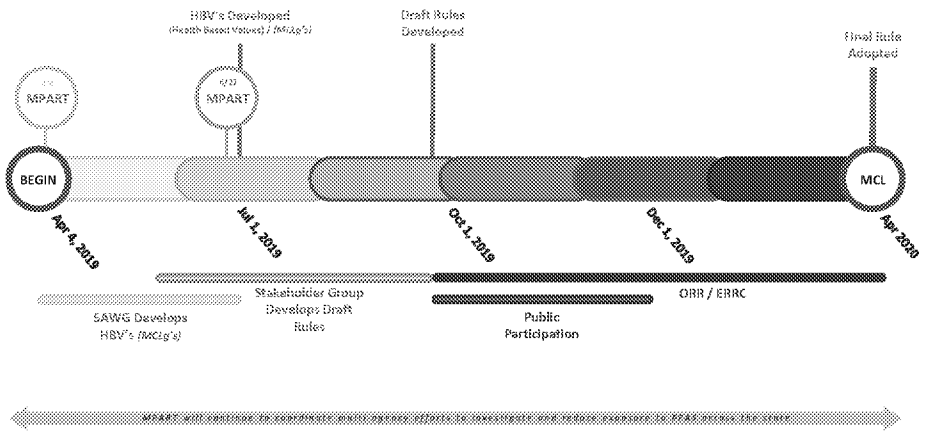
Health-Based Values

Specific PFAS	Parts Per Trillion (ppt)
PFOA	8
PFOS	16
PFHxS	51
PFNA	6
PFBS	420
GenX	370
PFHxA	400,000

MCLs Timeline



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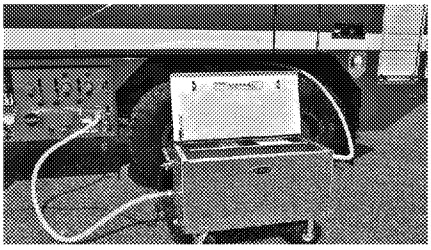
Fire Fighting Foam

- State Fire Marshal survey of fire departments
- MDOT survey of airports
- Special equipment for required training
- PEAS Hotline after use
- Collection and disposal program
- Evaluating alternatives



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MICHIGAN PFAS ACTION RESPONSE TEAM (MPART)

www.Michigan.gov/PfasResponse

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MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY

Michigan Department of AGRICULTURE & Rural Development

MDHHS

Michigan Department of Health & Human Services

MDOT

Michigan Department of Transportation

LARA

EGLE

Questions and Comments

Q. David Farrer: What part of the deer had the highest perfluorooctanesulfonic acid (PFOS) concentrations?

A. Steve Sliver: It's showing up in the nonfatty tissue. We did analyze different organs of the deer. Information about which parts of the deer were tested and the corresponding results are available on the following website: www.Michigan.gov/PfasResponse.

Q. David Farrer: What is known so far about uptake of PFAS into the edible parts of food plants from soil?

A. Steve Sliver: Very little is known about that, so one of the things that we've added to our study of biosolids and how that might impact agricultural fields when land applied is we have just now started testing various parts of corn plants from the roots to the edible portions. We don't have the results from that yet. From what we understand from some studies (e.g., studies from Australia and others), some of the shorter chain (e.g., 4 and 6 chain) PFAS compounds move through the plant much more readily than the longer carbon chain ones (8 carbon chain or more) like PFOS. We don't know that there's a whole lot of information out there on that yet. We are just starting on that and our Department of Agriculture and Rural Development is working with the U.S. Department of Agriculture and the U.S. Food and Drug Administration (FDA) on potential impacts and other agricultural applications across the state, so stay tuned for that.

Q. Steve Via: What are the known health effects from drinking water at the concentrations Michigan has observed in drinking water?

A. Steve Sliver: I'm not the toxicologist, and I know Gloria Post is on this webinar. She will talk a little bit more about the states moving forward addressing PFAS in drinking water, so I'm going to defer that question to her.

Q. David Farrer: Which tissues in fish had the highest levels of PFAS compounds? Is there evidence that removal of skin and fatty parts of fish could reduce PFAS in fish prior to consumption?

A. Steve Sliver: Basically, we are finding it in the nonfatty parts of the fish, in the nonfatty fillets. Information about concentrations detected in fish tissues, and fish advisories across the state and the various species of fish to which those apply are available on the following website: www.Michigan.gov/PfasResponse.

Q. Meghan Williams: Does Michigan plan to review/revise their surface water criteria in light of the revised drinking water values?

A. Steve Sliver: At this point in time, Michigan is focused on drinking water. At some point in time, the question will come up: Does the science that's driving these drinking water criteria mean that we will have to lower or adjust our standards for surface water quality criteria? We haven't fully evaluated that yet either for the current perfluorooctanoic acid (PFOA) and PFOS or for the other five compounds that our scientists have recommended we have drinking water

standards for. Clearly the studies keep coming out and are driving the numbers lower, and we simply don't have an answer on when that might impact our surface water criteria. Same question goes for groundwater. We do know that with the way our current statute is written, the 70 parts per trillion (ppt) PFOA and PFOS for groundwater cleanup protective of drinking water standards will be basically overwritten by the maximum contaminant levels (MCLs) for those two compounds. So PFOA would go to 8 ppt and PFOS would go to 16 ppt as the official state cleanup criteria. For the other five compounds, we'd have to go through a process laid out in the statute if we choose to adopt them as cleanup criteria for groundwater.

C. Gloria Post: From a scientific point of view, it is logical that the reference dose (RfD)for all human health criteria or guidelines based on oral exposure would be the same. There is no scientific reason for it to differ unless there's a policy reason. The exposure considerations are different when you develop surface water criteria or drinking water guidelines.

C. Steve Sliver: Thanks for chiming in on this, Gloria. I appreciate it. The surface water quality criterion for PFOS is pretty low right now because it is the one compound that bioaccumulates so much. The science behind that continues to evolve.

Development of Draft Human Health Benchmarks for Pharmaceuticals in Drinking Water

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U.S. Environmental Protection Agency, Office of Water
Office of Science and Technology, Health and Ecological Criteria Division
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Visuals follow. Please contact the speaker for more information.

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1

Development of Draft Human Health Benchmarks for Pharmaceuticals in Drinking Water

COLLEEN FLAHERTY
FEDERAL STATE ECOLOGY AND RISK ANALYSIS COMMITTEE (FSIPAC)
DECEMBER 5, 2019

EPA

2

Overview

- Federal workgroup
- Purpose of developing benchmarks
- Proposed approach
- Next steps

3

Federal Workgroup on Pharmaceuticals in Water

- 2012 Memorandum of Understanding among EPA, USDA, HHS (FDA), and DOI (USGS)
  - Provides a formal mechanism to improve and sustain federal coordination and collaboration on issues related to pharmaceuticals in drinking water
- Current members:
  - EPA (Office of Water, Office of Research and Development)
  - FDA (Center for Drug Evaluation and Research; Center for Veterinary Medicine)
  - USGS National Water Quality Program
  - USDA Agricultural Research Service
  - National Institutes of Health, National Toxicology Program
  - Army Public Health Center
- The workgroup identified human health benchmarks as a tool that would help federal and state partners provide a consistent risk communication message to address public concerns about pharmaceuticals in drinking water.

4

The Problem

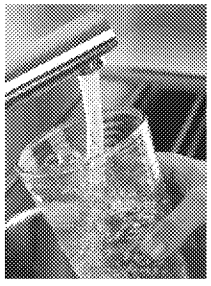
- Pharmaceuticals have been increasingly identified in source waters (surface and groundwater) and treated drinking water in the United States due to increased usage and enhanced detection methods
- The general public is increasingly concerned about reports of pharmaceuticals in their drinking water
- Risk managers, water utilities, and others need information to better characterize potential risks associated with pharmaceuticals in drinking water

THE BLOG

Prescription Tap Water: What Drugs Are We Taking With Our Drugs?

By Robert D. Morgenthau, Jr.

If you take medication with a glass of tap water, you may be getting more medicine than your doctor prescribed. A study by the Associated Press on the presence of pharmaceuticals in the nation's water supply has identified an alarming array of prescription substances that are reaching more than 40 million Americans in cities across the country.



Health

There Are Drugs In Your Drinking (and Bottled) Water

They might even be interacting with the drugs you're intentionally on.

Purpose of Human Health Benchmarks

- Human health benchmarks for pharmaceuticals in drinking water would be **non-regulatory** and could serve multiple purposes for federal agencies, states, and public water systems:
  - Improve **characterization of potential health risks** associated with the occurrence of pharmaceuticals in drinking water, including in the context of water reuse;
  - Provide information for federal, state, and local **risk communication** efforts; and
  - Provide information to **prioritize monitoring** of pharmaceuticals

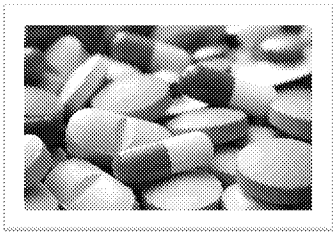
Purpose (Cont'd)

- Benchmarks would not impose requirements
  - Utilities will not be asked to begin monitoring for pharmaceuticals because of these benchmarks
- Benchmarks are a screening tool
  - They can be used assist risk assessors in determining if a pharmaceutical in drinking water warrants further evaluation, including monitoring or additional research
- Similar to approach for Human Health Benchmarks for Pesticides developed by EPA

Proposed Approach

- Prioritize pharmaceuticals as candidates for benchmark development based on known or likely occurrence in drinking water sources and/or tap water
  - Examples of source literature: Safe Drinking Water Act Contaminant Candidate List (CCL), federal water monitoring surveys, the FDA Flush List, EPA's 2009 Targeted National Sewage Sludge Survey, analytical lists used for evaluating pharmaceuticals in water and other media
- Benchmarks would be based on FDA label information
  - Currently labeled for human use
  - Oral dose
  - No active pesticide registration
- Use existing EPA methodology to calculate benchmarks

Step 1: Locate or Develop a Dose



- Seeking a practical approach to develop benchmarks for a large number of pharmaceuticals
- Screen EPA IRIS and PPRTV databases for oral reference dose information (RfD)
- Obtain dose information on the Lowest Therapeutic Dose from FDA label when EPA RfD is not available
  - Apply uncertainty factors to account for variability and uncertainty in the available data, per EPA guidance
  - Adjust for bodyweight, per EPA guidance
  - This approach is similar to efforts by WHO and Minnesota Department of Health

Step 2: Calculate a Human Health Benchmark for Water

- Calculation requires toxicological endpoint and drinking water exposure
  - Endpoint: EPA RfD or Screening dose (based on lowest daily therapeutic dose)
  - Human exposure: drinking water intake per bodyweight and the percent of exposure attributable to drinking water (RSC)
- Considering multiple drinking water scenarios, consistent with the Human Health Benchmarks for Pesticides
  - Considering developing benchmarks for two scenarios, bottle-fed infants and the general population

Benchmark for Bottle-Fed Infants (µg/L) =

$$\frac{\text{s-Dose (mg/kg-day)} \times 1000\ (\mu g/mg)}{\text{Infant BW-DWI Rate (L/kg-d)}}$$

Non-Cancer Benchmark for General Population (µg/L) =

$$\frac{\text{s-Dose (mg/kg-day)} \times 1000\ (\mu g/mg) \times \text{RSC}}{\text{Adult BW-DWI Rate (L/kg-d)}}$$

Next Steps

- Continue developing the draft human health benchmarks for pharmaceuticals
- Conduct outreach to stakeholders
- Release draft benchmarks for public comment

Questions?

COLLEEN FLAHERTY
Deputy Director, Health and Ecological Criteria Division
Office of Water/Office of Science and Technology
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202-564-5939

Questions and Comments

Q. Colleen Flaherty: Is having human health benchmarks for pharmaceuticals something that you would find useful? Does anybody think their state would be interested in having information like this available?

Following are responses to Colleen Flaherty's question from the webinar attendees:

- David Farrer: Yes, for Oregon Health Authority.
- Kelly Mascarenhas: Yes, from New Jersey Department of Environmental Protection.
- Divinia Ries: Yes, for Michigan Department of Environmental Quality.
- Thomas Miklos: Yes, for Georgia Environmental Protection Division.
- Eileen Hack: Yes, from Indiana Department of Environmental Management.
- Sarah Yang: Wisconsin Department of Health Services would find this useful.
- Bob Benson: EPA Region 8 would find this to be useful information.
- Connie Brower: North Carolina Department of Environmental Quality would find this to be quite helpful, although it would be challenging to answer questions for the public with respect to how to control the discharges.
- Audrey Rush: Yes, Ohio Environmental Protection Agency would find this useful.
- Kofi Asante-Duah: The District of Columbia Department of Energy & Environment probably would. Thanks!

C. Colleen Flaherty: That's good to hear. In other folks' analysis who have used a similar approach, I think what they are finding is the take-home message is that you generally shouldn't have to be concerned about these. The monitoring concentrations they are finding in drinking water are typically far below the benchmarks. I think, in some cases, that can be different for wastewater and surface water, but I think development of these benchmarks would provide a way for us to answer public questions with some science behind it.

I think right now at EPA we do a lot of handwaving and say, "Well, the concentrations are very low and we don't have a lot of information." I think we'd like to be in a position to say "Well, based on what we have in front of us and considering the lowest therapeutic dose with a conservative uncertainty factor (UF) on there, we just don't think that's going to be a problem."

I'm happy to hear that you guys are supportive of it. If you have other ideas, I'd be happy to hear them. Please give me a call if you have suggestions for other stakeholders we should be reaching out to. We have a list of folks that we plan to reach out to; if you have particular people in your state or others you'd like us to reach out to, please let us know.

C. Divinia Ries: Michigan developed a criterion for one pharmaceutical compound.

Q. Amy Risen: I was wondering about the use of the lowest therapeutic dose. That is a desired effect. How does this compare with concentrations causing unwanted side effects?

A. Colleen Flaherty: That is a question that we grappled with among workgroup members. We don't have the ability to do a literature review and develop a RfD in a traditional manner. We want to be able to rely on information that is publicly available to everyone. Because there is no database of side effects of pharmaceuticals, the best thing we have is the FDA label database. We're going to go through every indication and every dose or therapeutic regimen for each pharmaceutical that has been identified as a candidate, pick the absolute lowest one, and apply what we think is a conservative UF. Right now, we are thinking of applying a 3000 UF to all of them to account for side effects, for differences in sensitive subpopulations, the fact that it is a lowest observed adverse effect level (LOAEL) really and not a no observed adverse level (NOAEL), and database uncertainties.

If you do apply that 3000 UF, I think we can be fairly confident that we think that's a conservative benchmark. If your drinking water concentration is below that benchmark, I think you can be pretty confident that there's low potential risk.

Q. Kofi Asante-Duah: How long a list of chemicals do you anticipate in the end?

A. Colleen Flaherty: We haven't settled on an exact number, but I think it would be in the range of the number of pesticide benchmarks we've developed in the past and that was around 350. That's why we are taking a different approach. There's no way we could embark on a project to develop 350 RfDs for pharmaceuticals nor would we want to do that for pharmaceuticals. We are taking a more crude, but what we hope is a more protective and useful approach, that would allow people to better characterize monitoring results.

C. Colleen Flaherty: I just have one more thing to say, and that's Go, Badgers!

C. Audrey Rush: Go Bucks!

The Effect of DBP Exposures on the Risk of Congenital Anomalies and Fetal Growth Restriction: New Epidemiological Study Findings

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U.S. Environmental Protection Agency
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Visuals follow. Please contact the speaker for more information.

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EPA United States Environmental Protection Agency

The Effect of DBP Exposures on the Risk of Congenital Anomalies and Fetal Growth Restriction: New Epidemiological Study Findings

J. Michael Wright, Michael Narotsky (US EPA),
John Kaufman, *Zorimar Rivera-Núñez*, Glennon Beresin
Amanda Evans, Amy Meyer, Charlotte Moreno,
Geoff Morgan, *Richard Summerhayes*, Bayzid Rahman

December 5, 2019
FSTRAC

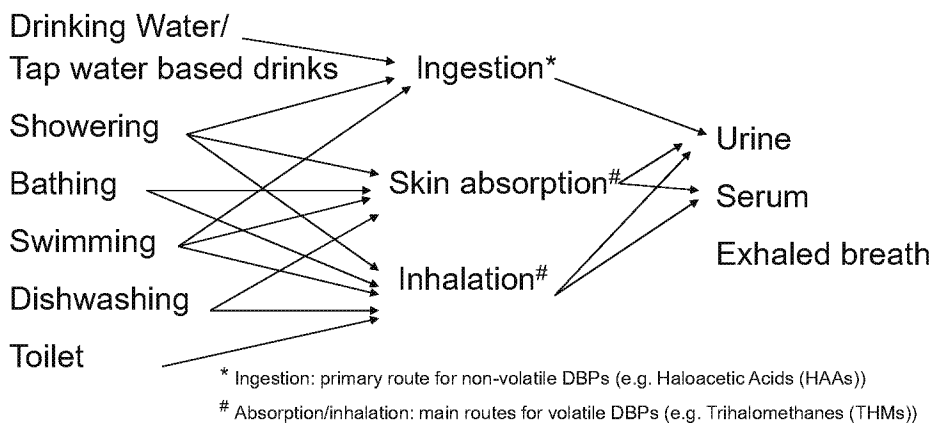
The views expressed in this presentation are those of the author and do not necessarily reflect the views or policies of the US EPA

EPA United States Environmental Protection Agency

Outline

- Disinfection Byproduct (DBP) Introduction
- MA Study of Birth Defects *(Published/In Review)*
- Weight of Evidence – Fetal Growth Restriction
- Meta-Analysis on SGA *(In Preparation)*
- Summary and Future Research Needs

DBP Exposure Considerations



* Ingestion: primary route for non-volatile DBPs (e.g. Haloacetic Acids (HAAs))

\# Absorption/inhalation: main routes for volatile DBPs (e.g. Trihalomethanes (THMs))

DBP Case-Control Study in Massachusetts

Study Population

Residents of Massachusetts towns with complete 2000 to 2004 THM4 and HAA5 data

Health Outcome Data (Mass. Birth Defects Monitoring Program)

- Cases (n=2,003): *diagnosed up to one year of age*
- Controls: Massachusetts Dep't of Public Health birth records
- 10 controls per each case matched by week of conception

Outcomes (Unpublished data) – ICD Codes:

- Urinary Tract Defects (UTDs) including:
  - -Obstructive UTDs (kidney, pelvis & urethra) (ICD9 753.2, 753.6)
  - -Hypospadias (ICD9 752.61)

Methods: Statistical Analysis

- Adjusted for different confounders including Multi-DBP models developed (i.e. THM models adjusted for HAA5; HAA models adjusted for THM4)

- Adjusted odds ratios (aORs) using logistic regression using exposure categories [e.g. quintiles, quartiles, tertiles, etc. (referent is lowest category)]

$$\text{Odds ratio} = \frac{\text{odds of exposure among cases}}{\text{odds of exposure among controls}}$$

*OR = 2.0 means twice the risk in the exposed relative to the unexposed; or a 100% increased risk

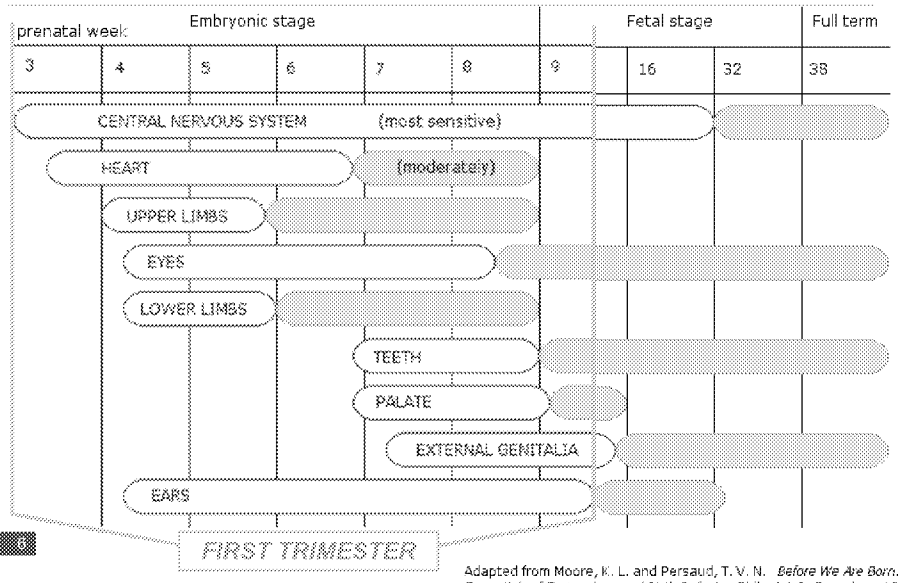
Methods: Aggregate Exposure Data

Exposure Data (linked to birth data by town of residence)

THM and HAA concentrations based on quarterly sampling
- 4 THMs: Chloroform, Bromoform, BDCM, DBCM
- 5 HAAs: TCAA, DCAA, MCAA, DBAA, MBAA
- Mixture measures: THM4, THMBr (Sum of 3 Brominated THMs), HAA5 & DBP9 (sum of all 9 HAAs/THMs)

Exposure Assessment (Aggregate/Group Level)
- Births assigned 1st trimester scores based on month of birth using town-level data averaged across sampling sites
- Temporally weighted averages used when multiple quarters overlapped the 1st trimester window

Teratogenic Critical Windows



Adapted from Moore, K. L. and Persaud, T. V. N. *Before We Are Born: Essentials of Embryology and Birth Defects*. Phila: W. B. Saunders, 1998.

Preliminary Results MA Study- (Unpublished) and WOE

Urinary Tract Defects (UTDs)

- Hypospadias: Null (consistent with 2009 meta-analysis)
- Obstructive UTDs
  - THMBr (OR=2.3; 95%CI: 1.0-5.6) 3rd vs 1st Tertile
  - BDCM (OR=1.9; 95%CI: 1.2-3.1) 3rd vs 1st Tertile
  - Null for other DBPs

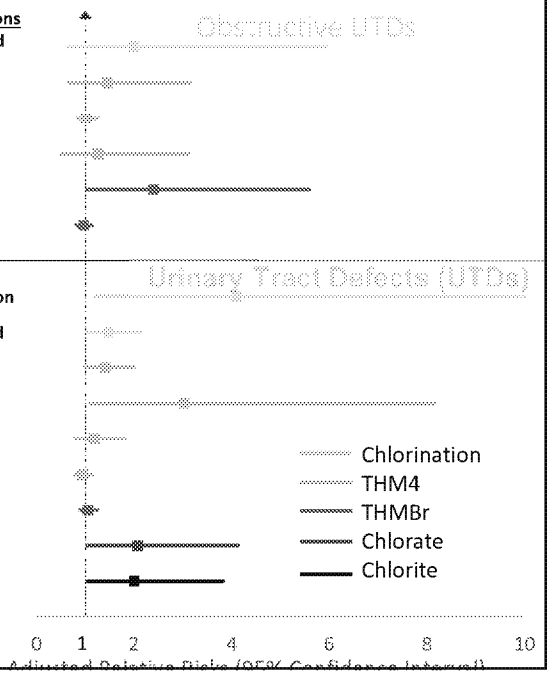
Evidence for Urinary Tract Defects (UTDs) [n=8 Studies]

Combined OR from 4 studies of THM4 or treatment type exposure = 1.3 (95%CI: 0.9-1.2) – *Nieuwenhuijsen et al, 2009*

Grazuleviciene et al, 2013: Exposure-response* [OR range: 1.7 to 2.9] for 1st trimester BDCM, CHCl3, & THM4 dose tertiles

Urinary Tract Defects & DBP/Disinfection Exposures

Reference	Exposure Comparisons
Hwang et al, 2002	Cl2 vs Unchlorinated
Hwang et al, 2008	> 20 vs 0.4 µg/L
Niewenhuijsen, 2008	> 60 vs < 30 µg/L
Wright (unpublished)	> 67 vs 19 µg/L
Wright (unpublished)	≥ 13 vs 4 µg/L
Niewenhuijsen, 2008	> 20 vs < 10 µg/L
Aschengrau, 1993	Cl2 vs Chloramination
Hwang et al, 2002	Cl2 vs Unchlorinated
Chisholm et al, 2008	≥ 130 vs < 60 µg/L
Grazuleviciene et al, 2013	> 21.9 vs ≤ 1.3 µg/L
Righi et al, 2012	> 2.5 vs ≤ 1.0 µg/L
Niewenhuijsen, 2008	> 60 vs < 30 µg/L
Niewenhuijsen, 2008	< 10 vs < 20 µg/L
Righi et al, 2012	> 200 vs ≤ 200 µg/L
Righi et al, 2012	> 700 vs ≤ 700 µg/L



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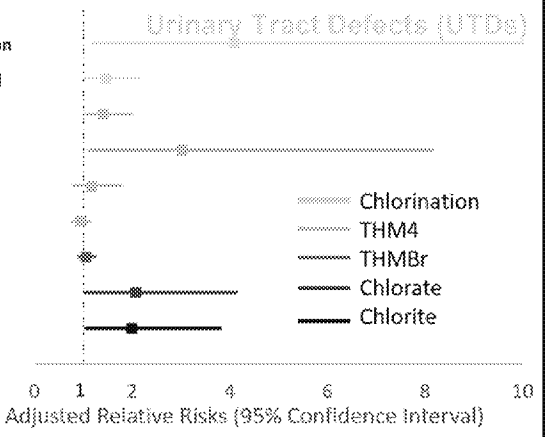

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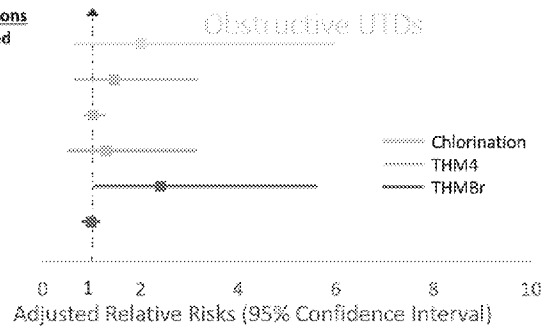

Weight of Evidence: Cardiac Defects

Evidence for Ventricular Septal Defects (VSDs) [n=4]

Combined OR=1.6 (95%CI:1.2-2.1) for 3 studies of THM4/Cl2, including one study demonstrating an exposure-response* relationship for VSDs - *(Nieuwenhuijsen et al, 2009)*

- Wright et al, 2017:
  - THM4 ≥65 vs <23 µg/L — OR=1.6 (95%CI: 0.7, 3.5) (*Range for all quartiles: 1.5-1.8*)
  - DBCM ≥3.9 vs <3.9 µg/L — OR=1.5 (95%CI: 1.0, 2.4)
  - Bromoform ≥0.3 vs <0.3 µg/L — OR=1.9 (95%CI: 1.2, 2.8)
- Nieuwenhuijsen et al, 2008:
  - Bromoform ≥4 vs <2 µg/L — OR=1.3 (95%CI: 0.9, 1.8)

Wright et al, DBPs & Risk of Specific Cardiac Defects. EHP 2017;125:269-77

Weight of Evidence: CFDs

Evidence for Craniofacial Defects (CFDs) [n=11]

2009 Meta-analysis of 7 CFD & 4 Cleft Palate (CP) studies: Null

Subsequent Studies (n=4)

Cleft Lip & Palate Study

–Weyer, 2018: Null for ingestion metrics, but associations for water concentration metrics [Any Exp. (vs. none)] for:

- TCAA OR=1.7 (95%CI: 0.6–4.4)
- BCAA OR=1.3 (95%CI: 0.8–2.0)

Cleft Palate Studies

–Righi, 2012: Chlorite OR=4.1 (95%CI:1.0–17) [>700 vs <700 µg/L]

–Righi, 2012: Chlorate OR=9.6 (95%CI:1.0–89) [>200 vs <200 µg/L]

–Kaufman, 2018: THM4 OR=1.9 (95%CI: 0.6-6.6) [>64 vs <20 ug/L]

OR Range: 2.1 to 2.9 for HAA5, TCAA and DCAA

Kaufman JA, Evans A, Rivera-Núñez Z, Wright JM. Associations Between Craniofacial Birth Defects and DBP Exposures. JOEM 2018;60(2):109–119.

Birth Defects and DBPs – Weight of Evidence

Some Increasing evidence for:

- Cleft Palate Defects
- Musculoskeletal Defects (not presented)

Strongest evidence for Birth Defects are for:

- Urogenital Defects
  - Obstructive UTDs including a signal for Brominated DBPs
- Cardiac - *consistency* for Ventricular Septal Defects
  - THM4 ≥65 vs <23 µg/L (OR=1.6; 95%CI: 0.7, 3.5) [= Meta-analysis]
  - DBCM ≥3.9 vs <3.9 µg/L (OR=1.5; 95%CI: 1.0, 2.4)
  - Bromoform ≥0.3 vs <0.3 µg/L (OR=1.9; 95%CI: 1.2, 2.8)

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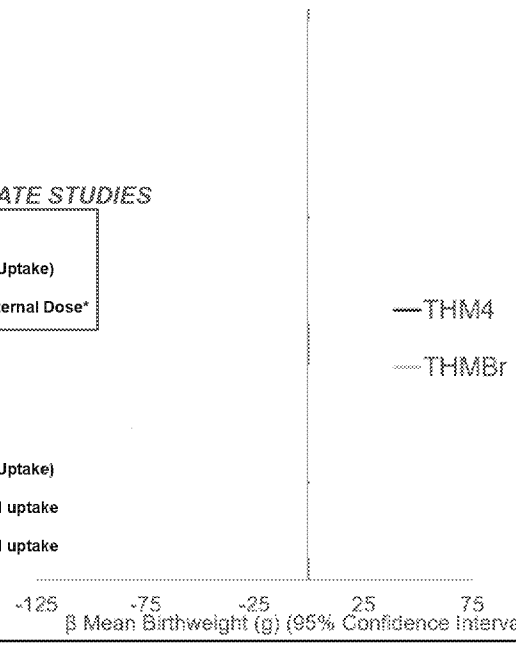
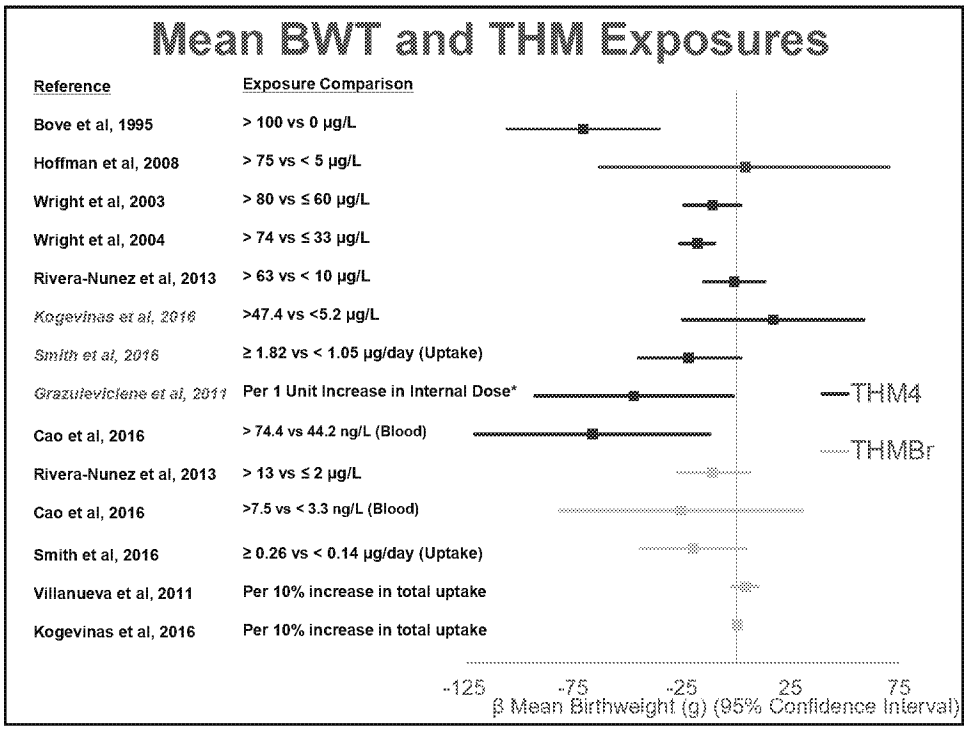
Outline

- Disinfection Byproduct (DBP) Introduction
- MA Study of Birth Defects *(Published/In Review)*
- Weight of Evidence – Fetal Growth Restriction
- Meta-Analysis on SGA *(In Preparation)*
- Future Epidemiological Research Needs

Mean Birthweight and THM Exposures

Reference	Exposure Comparison
Bove et al, 1995	> 100 vs 0 µg/L
Hoffman et al, 2008	> 75 vs < 5 µg/L
Wright et al, 2003	> 80 vs ≤ 60 µg/L
Wright et al, 2004	> 74 vs ≤ 33 µg/L
Rivera-Nunez et al, 2013	> 63 vs < 10 µg/L *HIWATE STUDIES*
Kogevinas et al, 2016	>47.4 vs <5.2 µg/L
Smith et al, 2016	≥ 1.82 vs < 1.05 µg/day (Uptake)
Grazulevicliene et al, 2011	Per 1 Unit Increase in Internal Dose*
Cao et al, 2016	> 74.4 vs 44.2 ng/L (Blood)
Rivera-Nunez et al, 2013	> 13 vs ≤ 2 µg/L
Cao et al, 2016	>7.5 vs < 3.3 ng/L (Blood)
Smith et al, 2016	≥ 0.26 vs < 0.14 µg/day (Uptake)
Villanueva et al, 2011	Per 10% increase in total uptake
Kogevinas et al, 2016	Per 10% increase in total uptake




Mean BWT and THM Exposures
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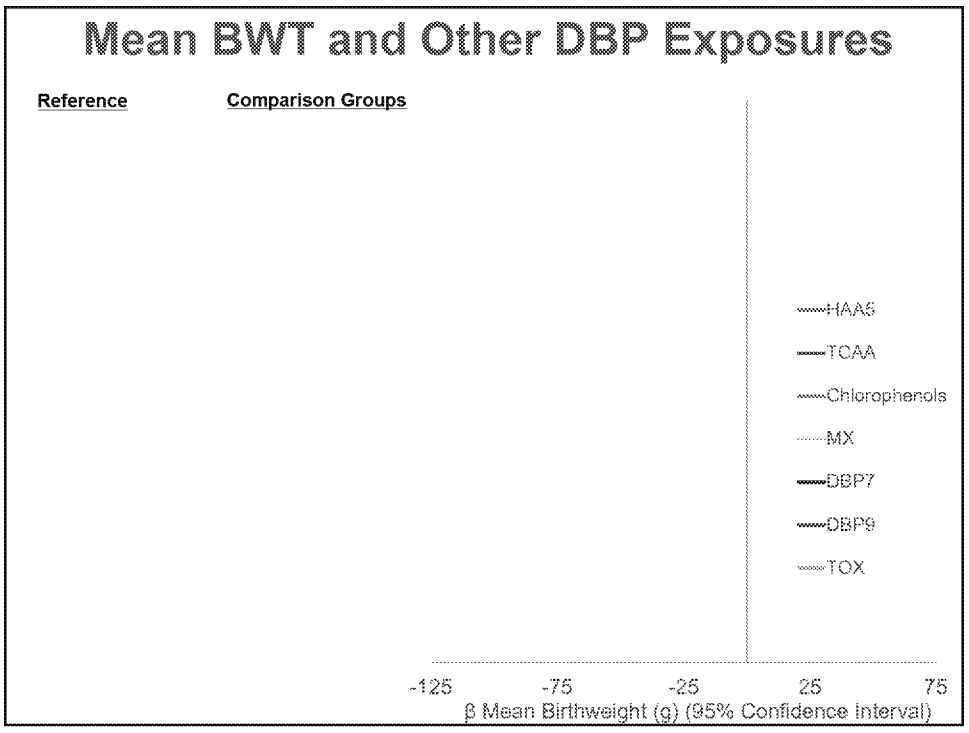
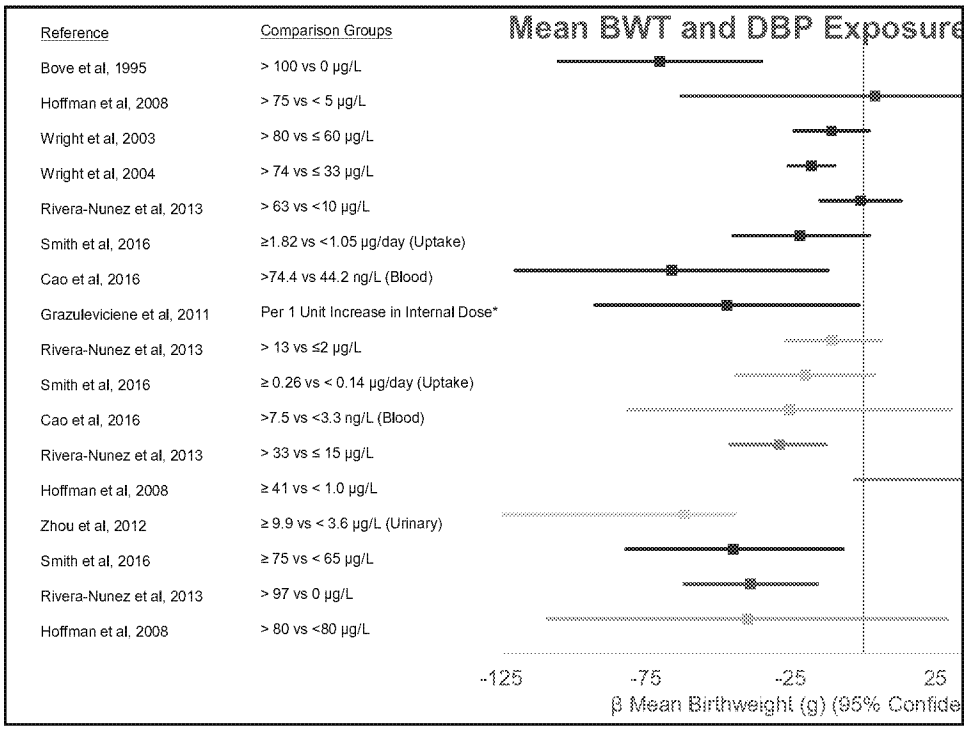
Per 10% increase in total uptake
Kogevinas et al, 2016
Per 10% increase in total uptake
THM4
THMBr
-125
-75
-25
25
75
β Mean Birthweight (g) (95% Confidence Interval)


Mean BWT and Other DBP Exposures
Reference
Comparison Groups
HAA6
TCAA
Chlorophenols
MX
DBP7
DBP9
TOX
-125
-75
-25
25
75
β Mean Birthweight (g) (95% Confidence Interval)



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Mean BWT Studies: Biologic Gradient and Consistency

Exposure-response relationships for BWT and:

- THM4, CHCl3, and MX tertiles in Wright et al (2004)
- 4 out of 5 THM metrics in Grazuleviciene et al (2011) (Range: 26−58 g) for each unit increase in internal dose estimates

Consistent mean BWT deficits (Range: ~20−70 g) for:

- High THM exposure groups in 6/9 studies
- High Brominated THM exposures in 3/5 studies

These consistent deficits are similar in magnitude with other environmental contaminants

Environmental Exposures and Birthweight (BWT)

Exposure	↓ BWT	Reference
Env'l Tobacco Smoke	31-41 g	Peacock et al, 1998 Windham et al, 1999
Benzene	58 g	Chen et al, 2000
PCBs	58 g	Taylor et al, 1984
Arsenic	57 g 30 g	Hopenhayn et al, 2003 Yang et al, 2003
DBPs	20-70g	

THMs & Small for Gestational Age (SGA): Direct & Indirect Measures

Water Concentration Exposure Measures

Grellier et al, 2010: A meta-analysis of 6 studies of 3rd trimester THM4 exposure found an increased risk (small in magnitude) for SGA births

Chinese Biomarker Studies of SGA (Yang, 2019; Cao, 2016)

Higher risks reported between SGA and:

- Blood THM4 >74 vs 44 ng/L (OR=2.3; 95%CI: 1.0, 5.0)
- Blood THMBr >7.5 vs <3.3 ng/L (OR=1.9; 95%CI: 1.0, 3.8)
- Urinary TCAA Quartile 4 vs 1 (OR= 1.2; 95%: 0.6, 2.5)

±Small for gestational age (SGA): Lowest % of BWT [10%, 5%, 3%] stratified by Gest Age, Sex...
HIWATE = Health Impacts of long-term exposure to disinfection byproducts in drinking WATEr

SGA HIWATE Studies: Dose/Uptake/Water

THM Dose/Uptake Estimates (HIWATE Cohorts)

- Villanueva et al, 2011: Null for SGA and THM exposures measured via uptake (ingestion, showering, bathing and pool use)
- Grazulviciene et al, 2011: Increased risk for THM4, CHCl3 & BDCM tertile doses (Range: 1.2-1.4) with exposure-response for Chloroform & THM4

Biomarker Studies (HIWATE) of SGA± (Costet et al., 2011)

Higher risks reported between SGA and:

- Any urinary TCAA vs. <LOD (OR=1.8, 95%CI: 0.9, 3.7), but few associations found for Water Concentration data
- THM4 uptake >0.94 vs. <0.35 µg/day (OR=2.0; 95%CI: 0.8, 5.1)
- Increased risks for Uptake of all Brominated THM measures

Outline

- Disinfection Byproduct (DBP) Introduction
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- Meta-Analysis on SGA *(In Preparation)*
- Summary and Future Research Needs

DBP Meta-analysis of SGA: Design and Methods

Systematic review of over 40 publications (prior to 2019) on DBPs and risk of *small for gestational age* (SGA) births

Inclusion criteria for Epidemiological studies:

- published in English
- reported comparable effect estimates (odds ratio, hazard ratio or relative risk and confidence intervals)
- provided exposure categories to examine exposure-response relationships
- using residential water concentrations estimates of THM and HAA exposure in relation to SGA

n=16 studies (18 different study populations) were eligible
Summerhayes et al (In Preparation)

Meta-Analysis of SGA - Methods

- Primary analyses used logistic regression to calculate pooled (Summary) Odds Ratios based on categorical data using random effects models
- Meta-regression and Stratified analyses to evaluate impact: *type of water supply, type of disinfectant*, study quality evaluation scores, study design type, SGA definition, exposure window, journal impact factor, etc.)
- Heterogeneity Tests (Cochrane's Q & I^2 statistic) of RRs
- Outliers identified (and removed) via Galbraith plots
- Examined Publication Bias via Egger's Test
- Funnel Plot with Trim and Fill method
- Study Quality Evaluations and Inter-rater analysis (i.e. ICC)

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Results - HAAs

Main Analyses:

- Statistically significant associations detected for HAA5, TCAA, & DCAA, with larger ORs after removing statistical outliers*:
  - HAA5: OR=1.1; 95%CI: 1.0, 1.2 (n=7 studies)
  - TCAA: OR=1.2; 95%CI: 1.1, 1.4 (n=6 studies)*
  - DCAA: OR=1.3; 95%CI: 1.1, 1.4 (n=6 studies)*
  - DBAA: No increased risk detected among 3 studies

Stratified Analyses: Larger risks detected for:

- Chlorinated sites only for: HAA5 (OR=1.2; 95%CI: 1.1, 1.3)
  TCAA (OR=1.2; 95%CI: 1.1, 1.4)
  DCAA (OR=1.3; 95%CI: 1.1, 1.4)

null for the chloraminated & combined disinfectants group

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Results - THMs

Main Analyses: Associations for studies of all SGA outcomes

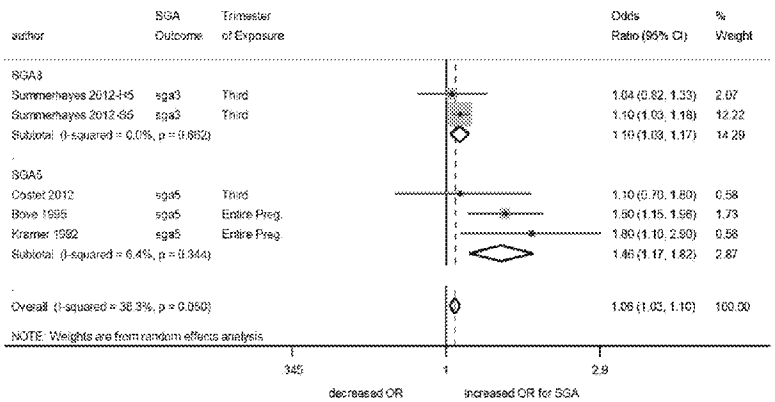
- THM4 OR=1.06; 95%CI: 1.03, 1.10 (n=18 studies)
- Chloroform OR=1.05; 95%CI: 1.01, 1.08 (n=16 studies)
- BDCM OR=1.08; 95%CI: 1.05, 1.11 (n=11 studies)
- THMBr OR=1.05; 95%CI: 1.02, 1.09 (n=7 studies)
- DBCM (n=11) & Bromoform (n=4): Null

Stratified Analyses:

- Larger risk in *Chloraminated & Combined disinfectant* studies (in contrast to chlorinated): THM4, THMBr, Chloroform, BDCM & DBCM

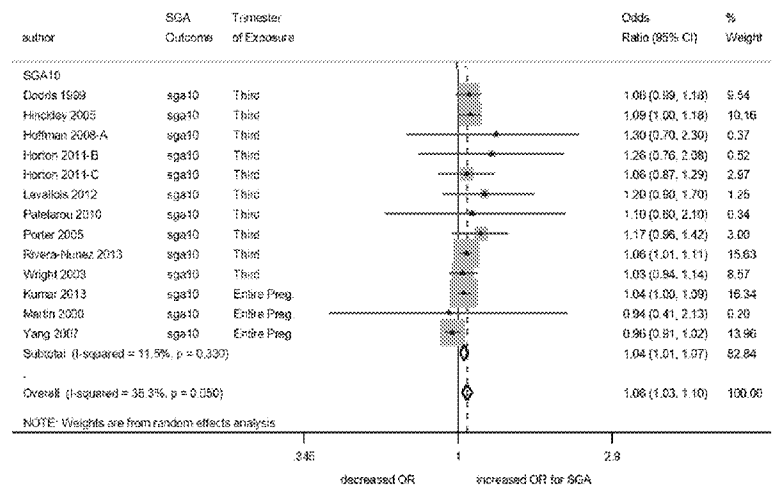
Forest Plot - SGA and THM4 Exposure

THM4 Exposure and Risk for SGA3, SGA5



Forest Plot - SGA and THM4 Exposure

THM4 Exposure and Risk for SGA10



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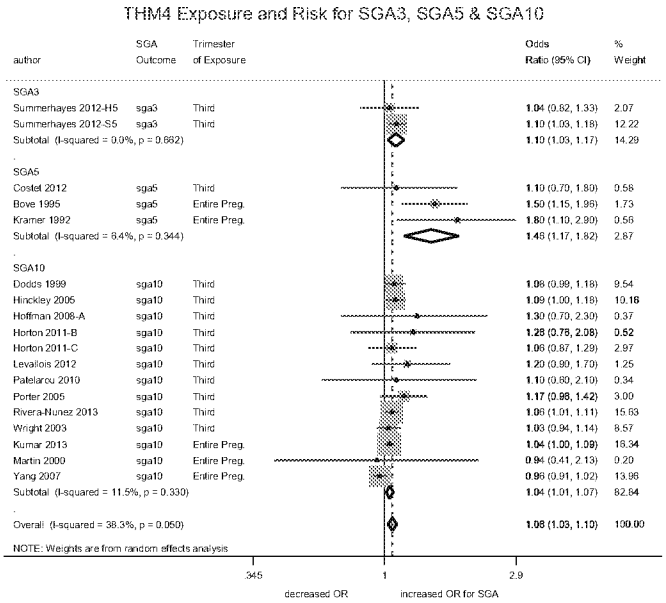

DBP Meta-analysis of SGA: Summary Results

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Statistically significant small risks for SGA detected for several THMs: Chloroform, BDCM, THMBr & Bromoform

Stratified (sub-group) analyses showed:

- Larger statistically significant risks of SGA for THM4, Chloroform, BDCM, BrTHM and DBCM for chloraminated and combined disinfectant supplies compared to smaller risks for chlorinated supplies
- *~ DBP Concentrations*

Caveat: This analysis of SGA adds to WOE by examining HAAs and individual DBPs, but power was limited by the number of available studies to conduct many stratified analyses

WOE Summary – Fetal Growth Restriction

- Inter-study differences in exposure metrics, mean levels and DBP mixture proportions *limit the ability to compare* results across study populations (e.g., to evaluate consistency)
- Nonetheless, consistent associations have been detected for DBP metrics and both Mean BWT & SGA
- Consistency of results (for some DBP measures) across heterogeneous populations and various study designs suggests that *bias is unlikely* to be the main explanation for mean BWT and SGA findings

DBP Developmental Studies – Future Research

- Effect Measure Modification: Identify key groups with increased risk (male/female; races; polymorphisms)
- Better power/exposure contrasts → increased sensitivity
- Low-exposed referents & High Exposure Levels
- Exposure Assessment (more direct estimates of total dose; biomarkers, etc.)
- DBPs beyond THMs/HAAs: Brominated/Iodinated DBPs [*HAA9; HAABr*], MX, chlorophenols, chloral hydrate, haloacetonitriles, halonitromethanes, haloketones, haloquinones and nitrosamines

EPA United States Environmental Protection Agency

References

Our Recent Studies of DBPs and Developmental Effects

Birth Defects in Massachusetts

Kaufman J, Wright JM, Rivera-Núñez Z, Meyer A, Narotsky MG. Associations between DBP Exposures and Musculoskeletal Birth Defects. In Review.

Kaufman JA, Evans A, Rivera-Núñez Z, Wright JM. Associations Between Craniofacial Birth Defects and DBP Exposures. JOEM 2018;60(2):109–119.

Wright JM, Evans AE, Kaufman J, Rivera-Núñez Z, Narotsky MG. DBP Exposures and the Risk of Specific Cardiac Birth Defects. Environmental Health Perspectives 2017;125:269–277.

Meta-analysis of SGA

Summerhayes R, Morgan G, Wright JM, Rahman B. Meta-analysis of Small for Gestational Age Births and DBP Exposures. In Preparation.

Office of Research and Development
National Center for Environmental Assessment

Contact Information: wright.michael@epa.gov

Polymorphisms and Fetal Growth Studies of DBPs

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- Zhou et al, 2018: Interactions found between maternal blood BrTHM and newborns CYP2E1 gene rs2031920 polymorphisms on *birth weight*
- Kogevinas et al, 2016: Weak evidence of the potential modification of effect of exposure to THMs on *SGA* by maternal CYP2E1rs743535 genotype and delGSTT1, *but interactions did not persist after multiple testing correction (given large # of tests)*
- Levallois et al, 2016: Interactions for *SGA* with CYP2E1 rs117618383 and rs2515641 *but were not statistically significant after multiple testing correction*
- Infante-Rivard, 2005: Newborns were at higher risk of *SGA* if they were carrying one or two C alleles of the CYP2E1gene rs3813867 (G1295C) polymorphism
- Bonou et al, 2017: Interactions found for *SGA* between mother and neonate carrying *CYP17A1* rs4919687 A and rs743572 G alleles and maternal exposure to THM4 and HAA5; *but interactions were not statistically significant after multiple testing correction*
- Danileviciute, 2012: Highest risk for *Low Birth Weight (not SGA)* for elevated THM exposure among carriers w/ Glutathione S-TransferaseM1(GSTM1) gene deletion

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- Cao et al. Blood Biomarkers of Late Pregnancy Exposure to Trihalomethanes in Drinking Water and Fetal Growth Measures and Gestational Age in a Chinese Cohort - EHP 2016;124:536–541.
- Deng et al. Urinary biomarker of late pregnancy exposure to drinking water disinfection by-products and ultrasound measures of fetal growth in Wuhan, China. Envl Research 2019;170:128-33.
- Guo et al. Associations of prenatal exposure to five chlorophenols with adverse birth outcomes-Envl Poll 2016; 214:478-84.
- Zhou et al. Effect modification of CPY2E1 and GSTZ1 genetic polymorphisms on associations between prenatal disinfection by-products exposure and birth outcomes. Envl Poll 2018;243:1126-33.
- Zhou et al. Decreased birth weight in relation to maternal urinary trichloroacetic acid levels-Scient Total Env 2012;416:105-110.
- *Nieuwenhuijsen et al. Pooled ORs from Meta-analysis of THM4 or treatment type exposure metrics. Environmental Health Perspectives 2009;117:1486–93*

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- Iszatt et al. Trihalomethanes in public drinking water and stillbirth and low birth weight rates: an intervention study. Environ Int. 2014;73:434-9
- Salas L et al. Maternal swimming pool exposure during pregnancy in relation to birth outcomes and cord blood DNA methylation among private well users. Environment International 2019 (123):459–466
- Smith et al. Birth weight, ethnicity, and exposure to trihalomethanes and haloacetic acids in drinking water during pregnancy in the Born in Bradford cohort. Environ Health Perspect 2016; 124:681-689
- Villanueva et al. Overview of Disinfection By-products and Associated Health Effects. Curr Envir Health Rpt 2015 (2):107.
- Yang-Urinary Biomarker of Prenatal Exposure to Disinfection By-products, maternal genetic polymorphisms in CYP2E1 and GSTZ1 and birth outcomes-2019, In Press.
- Weyer P, et al. Drinking water disinfection byproducts and risk of orofacial clefts in the National Birth Defects Prevention Study. Birth Defects Research. 2018;110:1027–1042

Questions and Comments

Q. James Jacobus: How well explored are the various possible developmental/birth defects based on the current literature? You presented male reproductive tract and cardiac defects, along with body weight effects. Curious if you think there is a need to explore additional developmental effects along with better exposure characterizations (nitrosamines, etc.).

A. Michael Wright: Yes, that's a good question. As I mentioned earlier, I feel like we're touching the tip of the iceberg. A lot of DBPs haven't been examined. The 18 studies and 40 publications I showed as part of our meta-analysis represent a large database for developmental epidemiological studies, and a lot of these effects, including the effects you mentioned here, just haven't been examined to that degree for only a few regulated DBPs. We have some evidence, but a lot has not been examined to that length and detail unfortunately. In epidemiology, we are often hamstrung with limited exposure data, so we are using trihalomethanes and haloacetic acid data as surrogates for whatever the mixture might be occurring in different systems. If anybody has any better DBP data out there to integrate, by all means, we'd be open to examining them.

C. Mary Butow: Boiling has been discouraged in terms of reducing PFAS exposure; unfortunately, this could be a conflicting message for some populations.

C. Michael Wright: That's a good comment. It does have be to taken into consideration with other risks and benefits. Boiling can concentrate other contaminants such as lead as well. Boiling does volatilize off and decrease some DBPs, but if there are other issues with other contaminants that are of a larger concern. Ultimately, risk managers should convey the comparative risks holistically (i.e. not in isolation of other waterborne contaminants).

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Basis of States' Drinking Water Guidelines for PFAS

Gloria Post, PhD
New Jersey Department of Environmental Protection
609-292-8497
gloria.post@dep.nj.gov

Visuals follow. Please contact the speaker for more information.

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Basis of States' PFAS Drinking Water Standards & Guidelines

Gloria B. Post, Ph.D., D.A.B.T.

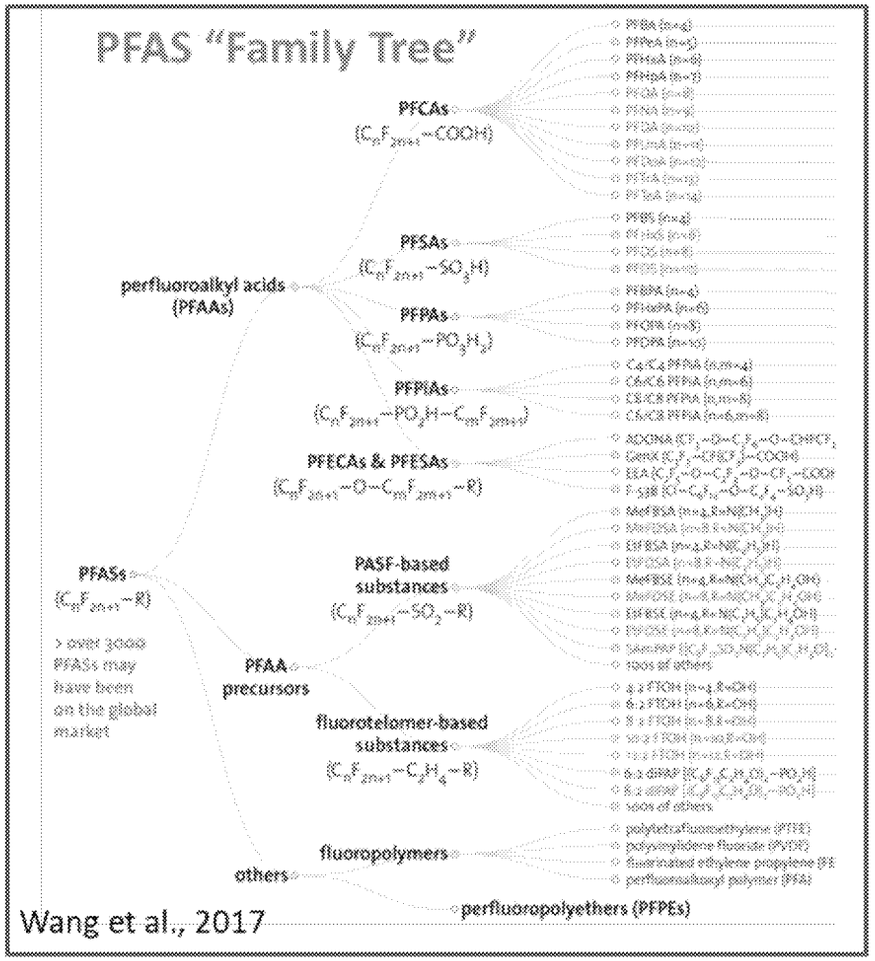
NJ Department of Environmental Protection

FSTRAC Webinar

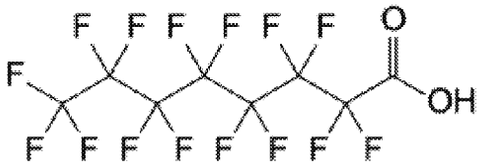
December 5, 2019

What are PFAS and PFAAs?

- **Per- and polyfluoroalkyl substances (PFAS)**:
  - Focus of **current interest.**
  - 1000s of compounds - many different structures.
  - Aliphatic compounds with at least one totally fluorinated carbon.
  - Commercial and industrial uses.
  - Produced and used for over 60 years.
  - Most have little or no health effects or occurrence information.
  - Most not detected by commercial laboratory methods.
- **Perfluoroalkyl acids (PFAAs)**
  - Subset of PFAS.



State PFAS Drinking Water Guidelines Focus Primarily on Perfluoroalkyl Acids (PFAAs):



Perfluorooctanoic acid (PFOA)

Perfluorooctanesulfonate (PFOS)

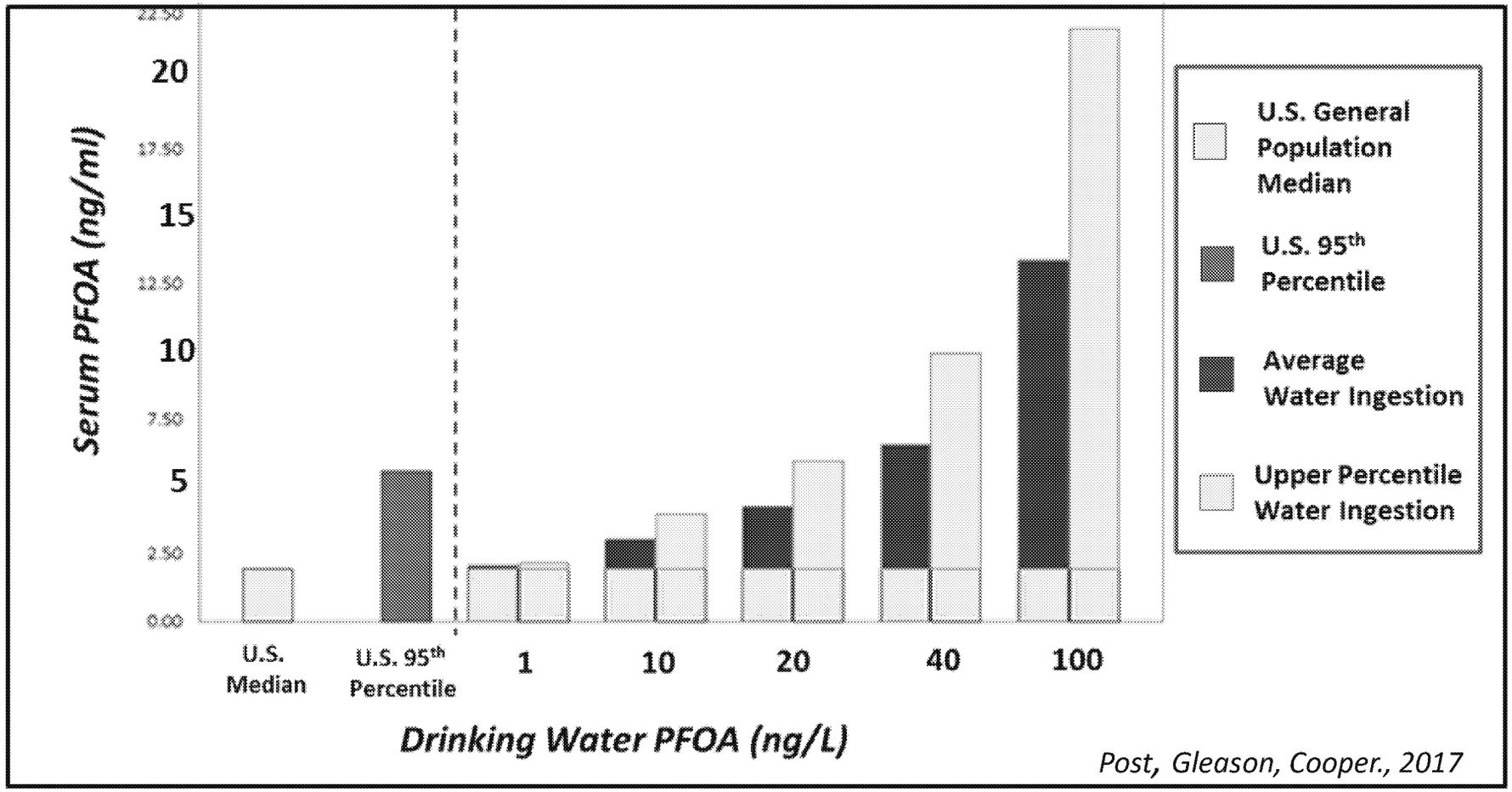
Carbon chain length	Abbrev-iation	Name
Carboxylates		
4	PFBA	Perfluorobutanoate
5	PFPeA	Perfluoropentanoate
6	PFHxA	Perfluorohexanoate
7	PFHpA	Perfluoroheptanoate
8	PFOA	Perfluorooctanoate
9	PFNA	Perfluorononanoate
10	PFDA	Perfluorodecanoate
Sulfonates		
4	PFBS	Perfluorobutane sulfonate
6	PFHxS	Perfluorohexane sulfonate
8	PFOS	Perfluorooctane sulfonate

- Totally fluorinated carbon chain - length varies.
- Charged functional group:
  - *Carboxylates (PFCAs; COO^-)*
  - *Sulfonates (PFSAs; SO_3^-)*
- Considerable occurrence and health effects data.
  - Long-chain PFAAs (e.g. PFOA, PFOS, PFNA) more bioaccumulative and toxic than short-chain PFAAs (e.g. PFBA, PFBS)
- Detected by commercial laboratory methods.
- Included in USEPA (2013-15) Unregulated Contaminant Monitoring Rule 3.
- Although use of **long-chain** PFAAs has been phased out…..
  - ***Do not break down.***
  - ***Environmental contamination persists.***

Why Are Long-Chain Perfluoroalkyl Acids (PFAAs) Such as PFOA, PFOS & PFNA of Particular Concern as Drinking Water Contaminants?

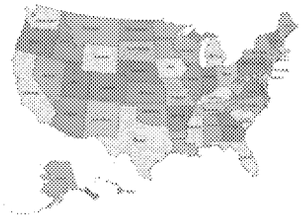
- Widespread occurrence in drinking water.
- Never break down in the environment.
- Found in blood serum of virtually all U.S. residents.
- Long human half-lives (~2-8 years) – bioaccumulate over time.
  - *Remain in the body for many years after exposure ends.*
- Multiple types of toxicity in animals, including some at low doses.
- In human studies, low exposure levels (general population; communities with contaminated drinking water) are associated with multiple health effects.
- **Low drinking water levels can overwhelm other common exposures** (e.g. food/food packaging, consumer products).
  - *Unlike other well-known persistent, bioaccumulative, and toxic (PBT) chemicals such as PCBs & dioxins - Drinking water is not an important exposure route for them.*
- When water is contaminated, infants receive higher exposures than older individuals, from breast milk or prepared formula.
  - *Sensitive subgroup for health effects.*
- **Overall - suggests need for caution about exposure from drinking water.**

With Ongoing Exposure, Low Drinking Water Concentrations of Long-chain PFAAs Can Dominate Other Exposure Sources



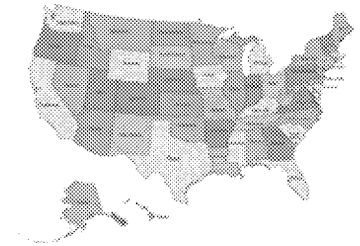
- In contrast to other persistent, bioaccumulative, & toxic (PBT) chemicals (e.g. dioxins, PCBs):
  - *Drinking water not important exposure route for these other PBT compounds.*

USEPA & State PFAS MCLs & Drinking Water Guidance Values



- In general, state MCLs and guidance values:
  - May address contaminants with no federal MCLs such as PFAS.
  - May be **more stringent** than federal MCLs.
- Some states have developed MCLs for many years, including for PFAS.
- Additional states never previously developed MCLs, but have developed PFAS MCLs or plan to do so.
  - Due to **nationwide concerns** about PFAS in drinking water.
- Other states do not currently plan to develop PFAS MCLs.
  - They are generally using the **USEPA Health Advisories** for PFOA and PFOS as guidance.

Health-based Values for Drinking Water Contaminants



Basis:

- **Toxicity factors**
  - Non-cancer ***Reference Dose*** *(ng/kg/day)* or ***Cancer Slope (Potency) Factor*** *(ng/kg/day)*$^{-1}$.
- **Exposure assumptions**
  - Drinking water ingestion rate (L/kg/day)
  - Relative Source Contribution (exposure from non-drinking water sources)

Standards versus Guidance for Drinking Water Contaminants

- **Standards:**
  - State and federal **Maximum Contaminant Levels (MCLs)**
  - *Enforceable*
  - *Require monitoring of all public water systems.*
    - *Water systems with contamination are expected to be identified.*
- **Guidance:**
  - **USEPA Health Advisories**; state **guidance values**
  - *Not enforceable – voluntary action is often taken.*
  - *Monitoring of public water systems is not required.*
    - *Water systems with contamination may not be identified.*

Interstate Technology & Regulatory Council (ITRC)
Tables of PFAS Standards & Guidance Values

Section 4 Tables Excel file (updated September 2019)

- Table 4-1 presents the available **PFAS water values** established by the USEPA, each pertinent state, or country (Australia, Canada and Western European countries).
- Table 4-2 presents the available **PFAS soil values** established by the USEPA, each pertinent state, or country (Australia, Canada and Western European countries).

Section 5 Tables Excel file (updated January 2019)

- Table 5-1 summarizes the differences in the **PFOA values for drinking water** in the United States.
- Table 5-2 summarizes the differences in the **PFOS values for drinking water** in the United States.

Posted at: https://pfas-1.itrcweb.org/fact-sheets/

Factors Considered in MCL Development: Example – New Jersey

- **Health-based MCL**
  - *Non-carcinogens – no health effects expected from lifetime exposure.*
  - *Carcinogens – 1 in 1 million lifetime cancer risk.*
- **Practical Quantitation Level (PQL)**
  - *Level that can be reliably measured by drinking water laboratories.*
- Availability of **treatment removal technology.**

*** Health-based MCL is the goal***

- *PFAA MCLs were not limited by analytical or treatment factors.*

- **Therefore, NJ PFAS MCLs were set at Health-based MCLs.**

(Units: ng/L)	Health-based MCL	Analytical PQL	Treatment Removal	Recommended MCL
PFOA	**14**	**6**	**Not limiting**	**14**
PFOS	**13**	**4.2**	**Not limiting**	**13**
PFNA	**13**	**5**	**Not limiting**	**13**

USEPA & State PFAS Drinking Water Guidelines (ng/L; ppt)

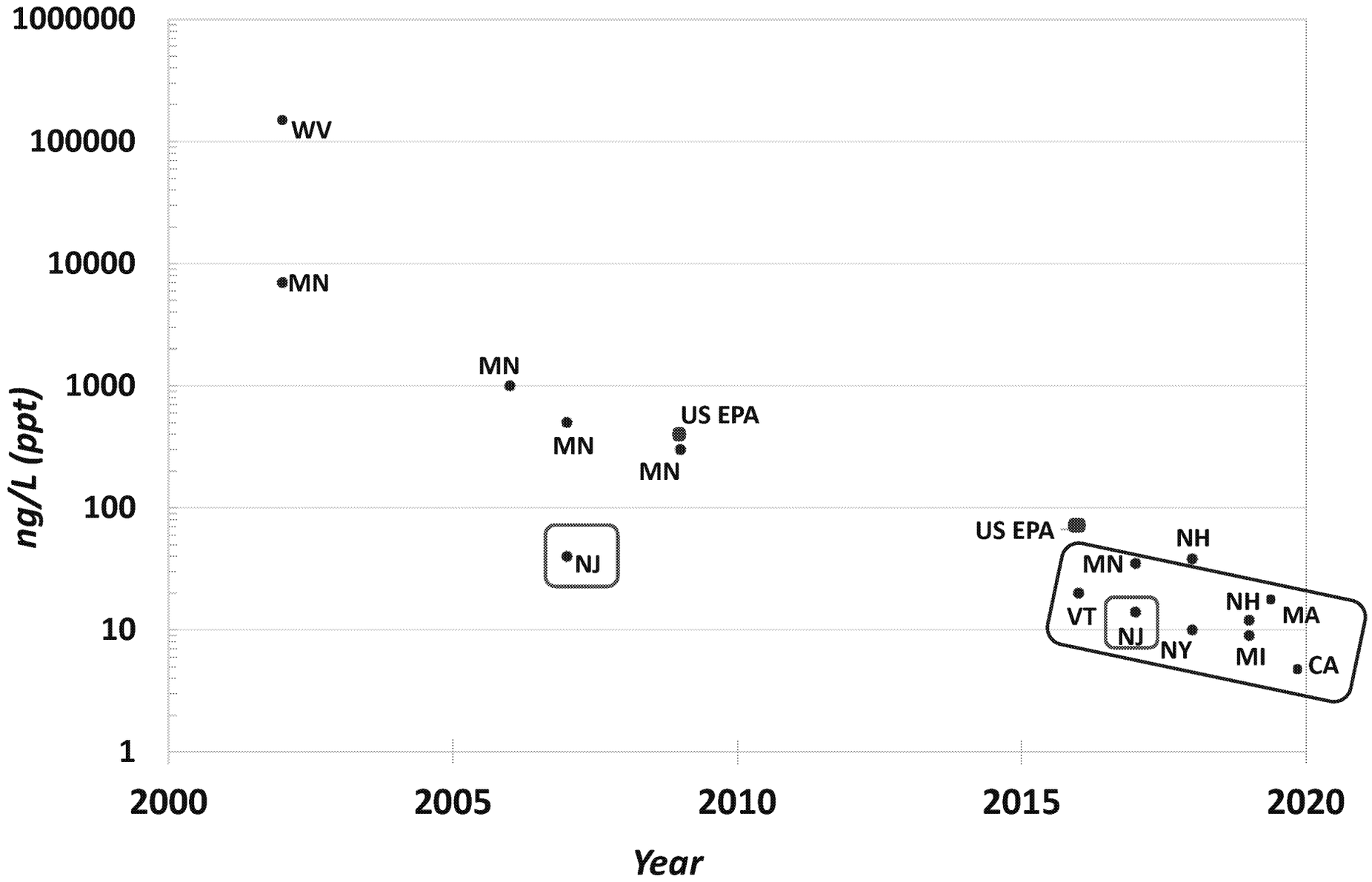
(Includes Standards & Guidance Values - Proposed, Recommended & Final)

	PFOA	PFOS	PFNA	PFHxS	PFHpA	PFDA	*Total?*	PFBA	PFHxA	PFBS	GenX
EPA	70	70	---	---	---	---	*Yes (2)*	---	---	---	---
CA*	5.1	6.5	---	---	---	---	*No*	---	---	---	---
CT	70	70	70	70	70	---	*Yes (5)*	---	---	---	---
MA**	20	20	20	20	20	20	*Yes (6)*	---	---	2000	---
MI**	8	16	6	51	---	---	*No*	---	400,000	420	370
MN	35	15	---	47	---	---	*No*	7000	---	2000	---
NH	12	15	11	18	---	---	*No*	---	---	---	---
NJ	14**	13**	13	---	---	---	*No*	---	---	---	---
NY**	10	10	---	---	---	---	*No*	---	---	---	---
NC	---	---	---	---	---	---	---	---	---	---	140
VT	20	20	20	20	20	---	*Yes (5)*	---	---	---	---

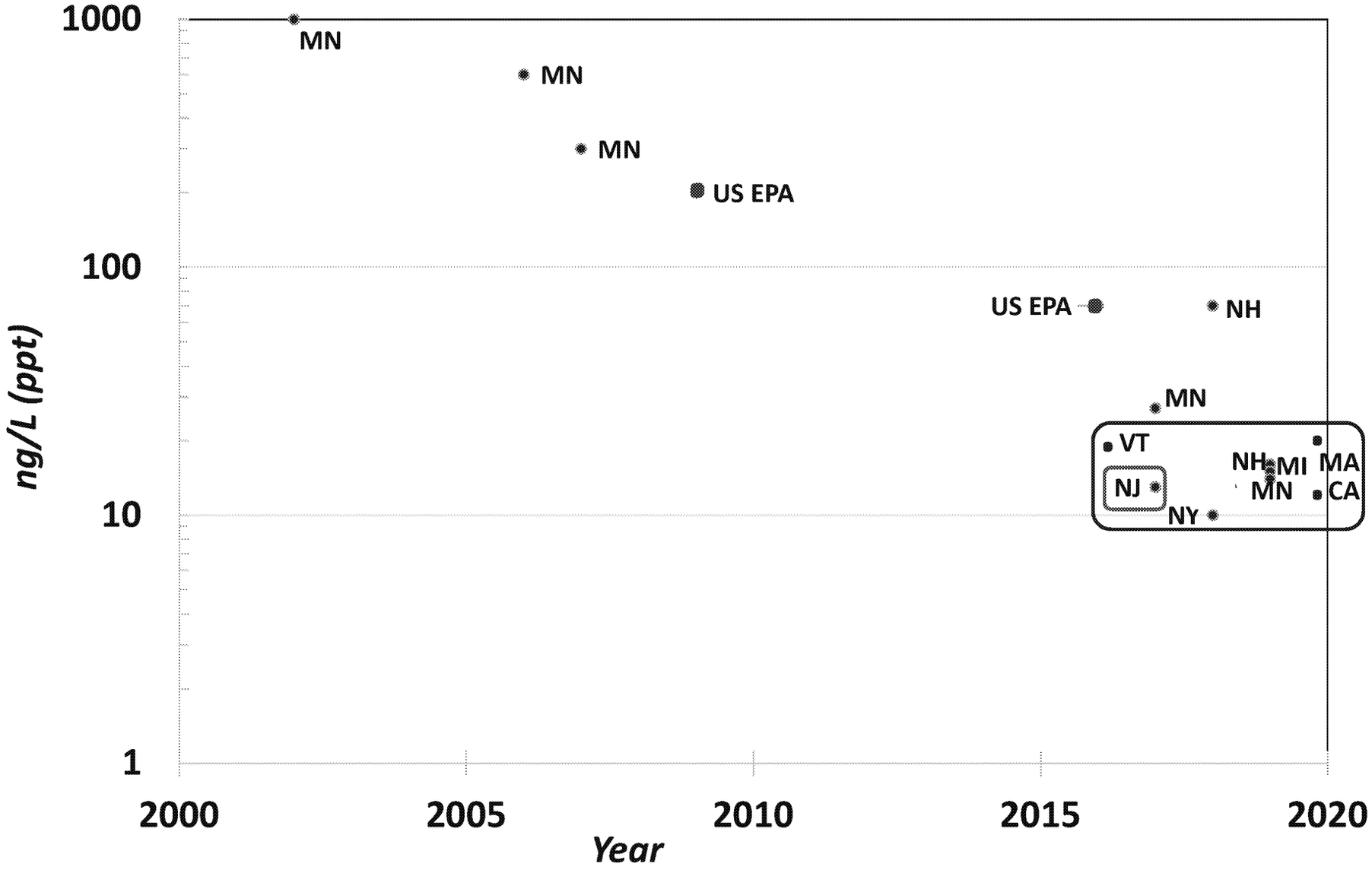
States not listed generally use USEPA Health Advisories of 70 ng/L for PFOA and PFOS as guidance.

**Notification Levels: based on analytical limits - health-based levels are < PQLs. Response Level is USEPA Health Advisory. **Proposed, recommended, or draft.*

State & USEPA PFOA Drinking Water Guidelines: 2002-2019
(Note Logarithmic Scale)



State & USEPA PFOS Drinking Water Guidelines: 2002-2019
(Note Logarithmic Scale)



Numerical Ranges of State Drinking Water Guidelines for PFOA & PFOS

- 8 states have developed PFOA & PFOS guidelines below USEPA (2016) Health Advisories (70 ng/L) since 2016.
- Range of state values:
  - ***PFOA*: *5.1 to 35 ng/L***
  - ***PFOS: 6.5 to 20 ng/L (ppt)***
- In general, states follow USEPA risk assessment guidance. However….
  - *Risk assessment is not a "cookbook" – involves scientific judgement.*
  - *Scientists who review the same data and use the same risk assessment guidelines may come to different conclusions.*
- **Numerical differences among state values are not large:**
  - *In the context of independently derived risk-based values.*
  - *Especially as compared to older values that were generally **100s to 1000s of ppt, and up to 150,000 ppt**…*

Toxicity Basis of State PFOA & PFOS Guidelines: Consideration of Human Epidemiology Data

- **Animal toxicology data** is the primary basis of all state guidelines.
- States generally conclude that there is substantial evidence for **multiple human health effects at low exposures.**
- However, states have generally concluded that limitations preclude human data as quantitative basis for risk assessment.
  - *Exposures to multiple PFAS are often correlated, preventing determination of dose-response for individual PFAS.*
- Several states compare serum PFAS levels associated with human health effects to serum PFAS levels predicted from exposure at the drinking water guideline.

Toxicity Basis of State Guidelines for PFOA & PFOS: Consideration of Carcinogenic Effects

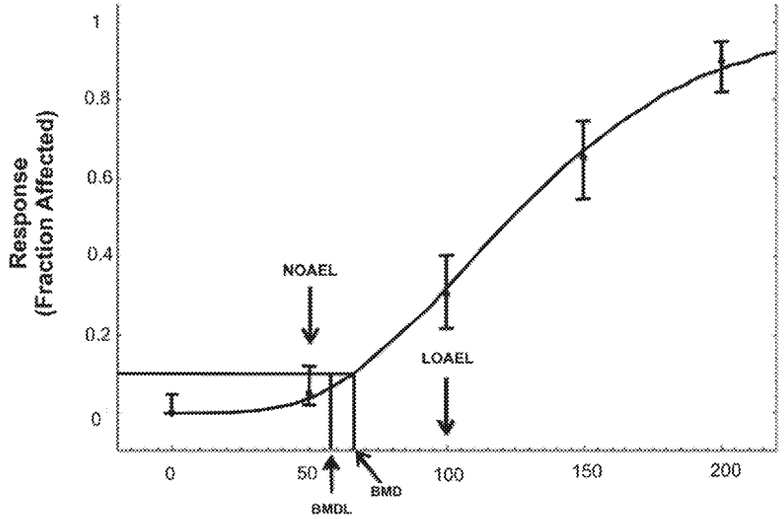
- **Non-cancer effects** (e.g. Reference Dose) are the primary basis of USEPA Health Advisories and current state PFAS guidelines, except for California Notification Levels.
- PFOA and PFOS (and GenX) are classified by USEPA as having ***"Suggestive Evidence of Carcinogenic Potential***."
- New Jersey and USEPA evaluated cancer risk and concluded that guidelines based on non-cancer effects are protective for cancer risk at the 1-in-1 million risk level.
- Notification Levels recommended by California EPA are based on cancer risk.
  - PFOA – 0.1 ng/L. Based on recent National Toxicology Program chronic rat study - not considered by USEPA, NJ, or other states.
  - PFOS – 0.4 ng/L. Based on older chronic rat study considered by USEPA, NJ, and other states.
  - These CA health-based values are below the PQL. Final Notification Levels are based on analytical considerations.

$$\text{Reference Dose (mg/kg/day)} = \frac{\text{Point of Departure}}{\text{Uncertainty Factors}}$$

Definition: "Daily oral dose to humans (including sensitive subgroups) likely to be **without appreciable risk** of deleterious effects during a lifetime."

Point of Departure (POD):

- **Benchmark Dose (BMDL) -** Modeled lower **confidence** limit on dose causing specified minimal change (e.g. 10%; 1 standard deviation).
- **No Observed Adverse Effect Level (NOAEL)**
- **Lowest Observed Adverse Effect Level (LOAEL)**



For PFAS, dose metric for POD is **serum PFAS level (ng/L)** from animal study:

- To account for much higher internal dose in humans than animals from same administered dose.
- Due to much longer human half-life.

*PFAS Reference Dose (RfD) Development Process**

<u>Serum Level</u> Point of Departure (POD) for critical toxicological effect from animal study *(ng/ml; BMDL, NOAEL, or LOAEL)*

↓ ***Apply Uncertainty Factors***

Target Human Serum Level (ng/L)

↓ ***Apply Clearance Factor** (relates serum level to human dose)*

Target Human Serum Level (ng/L) x Clearance Factor (L/kg/day)
= Reference Dose (ng/kg/day)

**CL (L/kg/day) =
Volume of Distribution (L) x (ln 2 ÷ $t_{1/2}$ [days])

↓

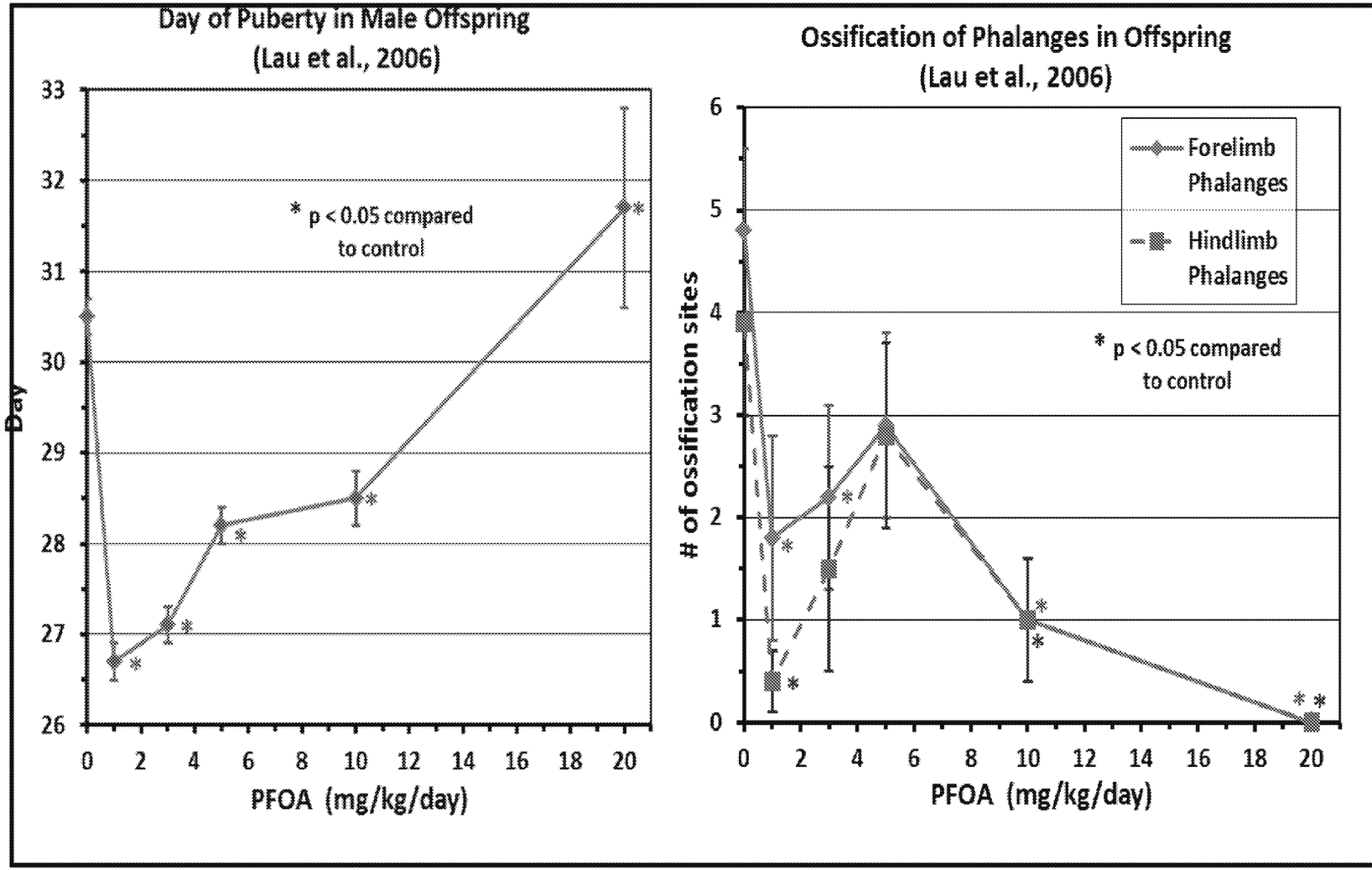
Reference Dose (ng/kg/day)

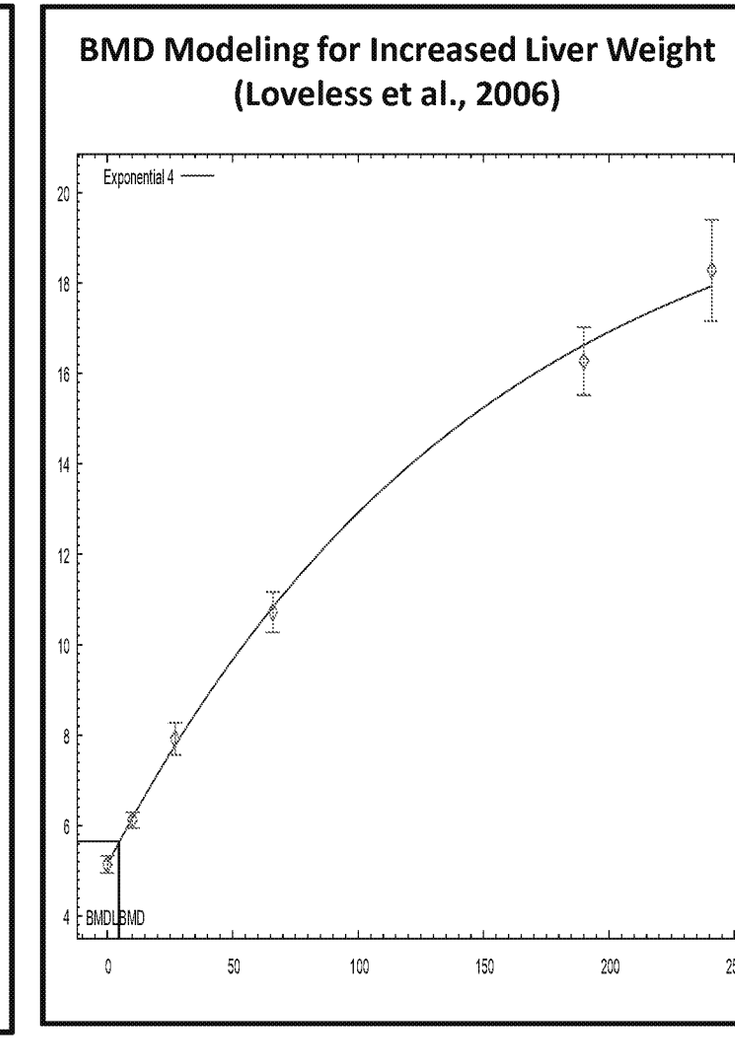
Order of application of Uncertainty Factors and Clearance Factors may be reversed in some states' processes -* ***Does not affect resulting Reference Dose.*

Toxicity Basis of State PFOA & PFOS Guidelines: Endpoints Not Considered by USEPA

- 7 states consider endpoints that are more sensitive (or judged as more appropriate) than used by USEPA (2016).
  - One state uses USEPA Reference Doses.
- ***PFOA***: USEPA endpoints - Developmental effects (delayed ossification; accelerated puberty in males) in mice.
  - ➢ *More sensitive or appropriate primary effect*: Mouse **neurobehavioral & skeletal** effects from developmental exposure (ATSDR endpoints; 1 state).
    - ↑ **liver weight** – not necessarily more sensitive than USEPA endpoints, but dose-response more appropriate for use in RfD (3 states).
  - ➢ *Database Uncertainty Factor of 3 or 10:* More sensitive mouse developmental effects such as **delayed mammary gland development** (7 states).
  - ➢ *Carcinogenic effects*: 1 state.
- ***PFOS***: USEPA endpoints - ↓ offspring body weight in rats.
  - ➢ *More sensitive critical effect*: **Immune suppression (↓ antibody response)** in mice (5 states).
  - ➢ *Database Uncertainty Factor of 3:* More sensitive developmental **thyroid effects** in rats (2 states); more sensitive **immune effects** (1 state).
  - ➢ *Carcinogenic effects*: 1 state.

PFOA: Dose-Response for Developmental Endpoints (USEPA) & Increased Liver Weight (4 States)





Toxicity Basis of State Guidelines: Toxicokinetic Considerations

- Point of Departure is serum PFAS level from animal study (all states):
  - *Measured at end of dosing period (PFOA: 4 states; PFOS: 6 states)*
  - *Modeled average (PFOA: 4 states; PFOS: 2 states)*

Serum Level (ng/L) x Clearance Factor (L/kg/day) = Human Dose (ng/kg/day)

Clearance Factor (L/kg/day) = Volume of Distribution (L) x (ln 2 ÷ Half-life [days])

- Clearance Factor to convert serum PFAS level from animal study to human external dose (all states).
  - ***PFOA:*** *USEPA Clearance Factor using 2.3 year half-life from community with drinking water exposure (Bartell et al., 2010; all states)*
  - ***PFOS:***
    - *USEPA Clearance Factor with 5.4 year half-life from retired workers (Olsen et al., 2007; 5 states).*
    - *Clearance Factor with 3.4 year half-life from community with drinking water exposure (Li et al., 2017; 3 states).*

Uncertainty Factors (UFs) Used in State PFOA & PFOS RfDs

UF	PFOA	PFOS	Comments
Human Variability	**10** (all 7 states)		Default for RfDs based on animal data
Animal-to-human	**3** (all 7 states)		Full factor of 10 not used. Toxicokinetic differences accounted for by serum PFAS level as dose metric.
LOAEL-to-NOAEL	**3** (2 states) **10** (2 states) 1 (3 states)	1 (all 7 states)	UF of 1 used for RfDs based on BMDL or NOAEL
Less than chronic duration	1 (all 7 states)		• Not used for developmental effects • States concluded that this UF is not appropriate for other critical effects of PFOA & PFOS from shorter studies.
Database	**3** (5 states) **10** (1 state) 1 (1 state)	**3** (3 states) 1 (4 states)	For potentially more sensitive toxicological effects
TOTAL	***100 - 1000***	***30 - 100***	

NOTE: UF of "1" means UF was not applied

Toxicological Basis: State Reference Doses for PFOA

	NJ	NH	NY	MI	MN	VT/USEPA	MA
Critical Effect	Increased liver weight			Developmental			
				Neurobehavioral; Skeletal*	Accelerated puberty (males); Delayed ossification		
Species	Mouse						
Study	Loveless et al. 2006		Macon et al. 2011	Onishchenko et al. 2011; Koskela et al. 2006*	Lau et al. 2006		
Serum PFOA Metric	Measured			Modeled average			
Point of Departure	BMDL			LOAEL			
Clearance Factor	From USEPA Health Advisory (to convert serum PFOA level to human administered dose)						
Intraspecies UF	10						
Interspecies UF	3						
LOAEL-NOAEL UF	1			3	3	10	
Database UF	10	3	3	3	3	1	3
TOTAL UF	*300*	*100*	*100*	*300*	*300*	*300*	*1000*
RfD (ng/kg/day)	2	6.1	1.5	3.9	18	20	5

*Studies and endpoints used in draft ATSDR (2018) Minimal Risk Level

Toxicological Basis: State Reference Doses for PFOS

	NJ/NY	MI	MN/NH	MA	VT/USEPA
Critical Effect	↓ antibody response to foreign antigen			Developmental: ↓ body weight in offspring	
Species	Mouse			Rat	
Study	Dong et al. 2009		Dong et al. 2011	Luebker et al. 2005	
Serum PFOA Metric	Measured			Modeled average	
Point of Departure	NOAEL				
Clearance Factor	From USEPA HA; based on $t_{1/2}$ of 5.4 years (Olsen 2007)	Based on $t_{1/2}$ of 3.4 years (Li et al., 2017)		From USEPA HA; based on $t_{1/2}$ of 5.4 years (Olsen 2007)	
Intraspecies UF	10				
Interspecies UF	3				
Database UF	1		3		1
TOTAL UF	*30*		*100*		*30*
RfD (ng/kg/day)	1.8 or 2*	2.9	3	5	20

*Difference due to rounding

Comparison of State, ATSDR (Draft) & EFSA Toxicity Factors with USEPA Reference Doses for PFOA & PFOS

Agency	PFOA	PFOS	Primary Difference in Basis
	ng/kg/day		
USEPA RfD (2016)	**20**	**20**	**----**
State RfDs* (2016-2019)	**2 – 6.1** (6 states) **USEPA** (2 states)	**1.8 – 5** (7 states) **USEPA** (1 state)	Consider more sensitive toxicity endpoints as Critical Effect and/or with Database Uncertainty Factor.
ATSDR Minimal Risk Levels (draft, 2018)**	**3**	**2**	
European Food Safety Authority Tolerable Daily Intakes (provisional, 2018)***	**0.8**	**2**	Based on human epidemiology data: • ***PFOA:*** ↑ cholesterol (↑ liver enzyme ALT; ↓ birth wt.) • ***PFOS:*** ↑ cholesterol, ↓ vaccine response (↓ birth wt.)

*Includes CA RfDs , although primary basis is cancer slope factor.

ATSDR (Draft) MRLs are for Intermediate exposure (15 days – 1 year). * Tolerable Weekly Intakes ÷ 7

Exposure Assumptions in State Guidelines: Drinking Water Ingestion

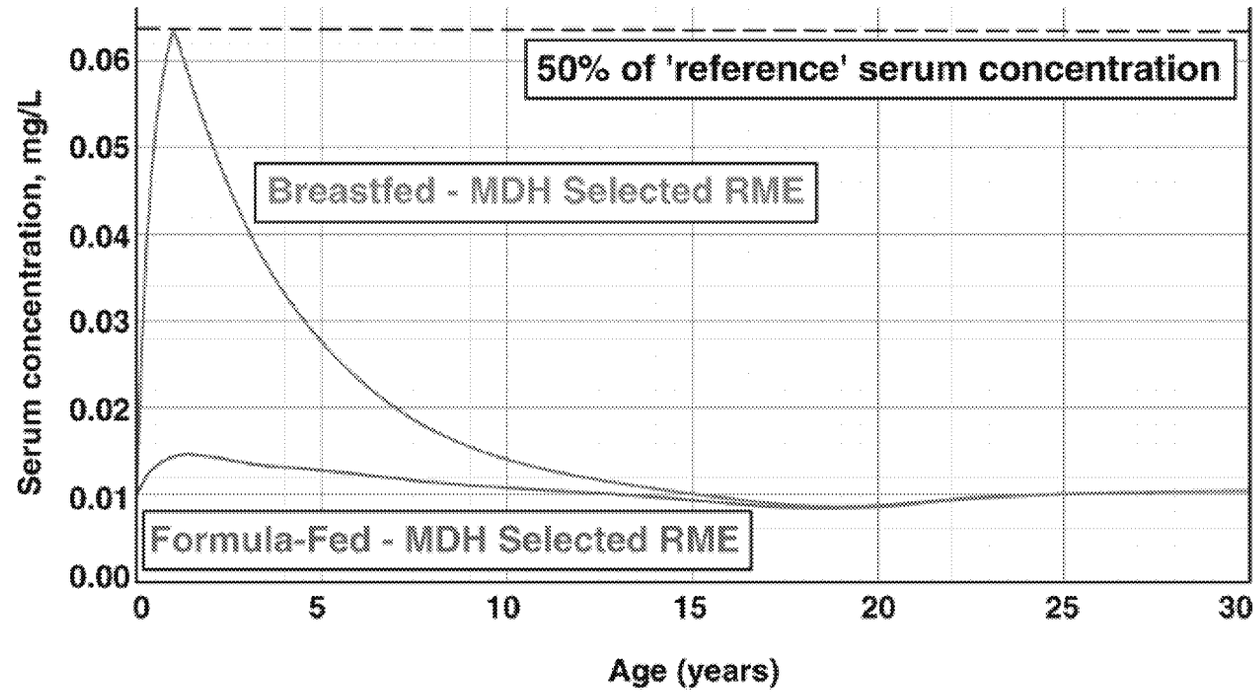
Drinking Water Guideline (ng/L) =

$$\frac{\text{Reference Dose (ng/kg/day) x Relative Source Contribution (\%)}}{\text{Water Ingestion Rate (L/kg/day)}}$$

- ↑ Ingestion rate (L/kg body wt./day) ⟶ ↓ Drinking water guideline.
- Target populations and approaches (constant ingestion rate or toxicokinetic model).
  - *Default adult (upper percentile) - 0.029 L/kg/day (1 state).*
  - *Lactating woman (80th percentile) - 0.054 L/kg/day (USEPA; 1 state).*
  - *Infant, 0-1 years old (95th percentile) - 0.175 L/kg/day (1 state).*
  - *Higher exposure of breast-fed infant – MN Dept. of Health toxicokinetic model (3 states).*

Minnesota Dept. of Health Model for Early Life PFAS Drinking Water Exposure (Goeden et al., 2019)

- Infant exposures higher than in older individuals.
- From breast milk or formula:
  - *Higher PFAS levels in breast milk than in mother's drinking water.*
  - *Infants ingest much more fluid per body weight.*
- Sensitive subpopulation for developmental & other short-term effects.
- Model considers:
  - *Prenatal exposure from maternal drinking water consumption.*
  - *Breast milk for 1 year.*
  - *Followed by lifetime drinking water exposure.*

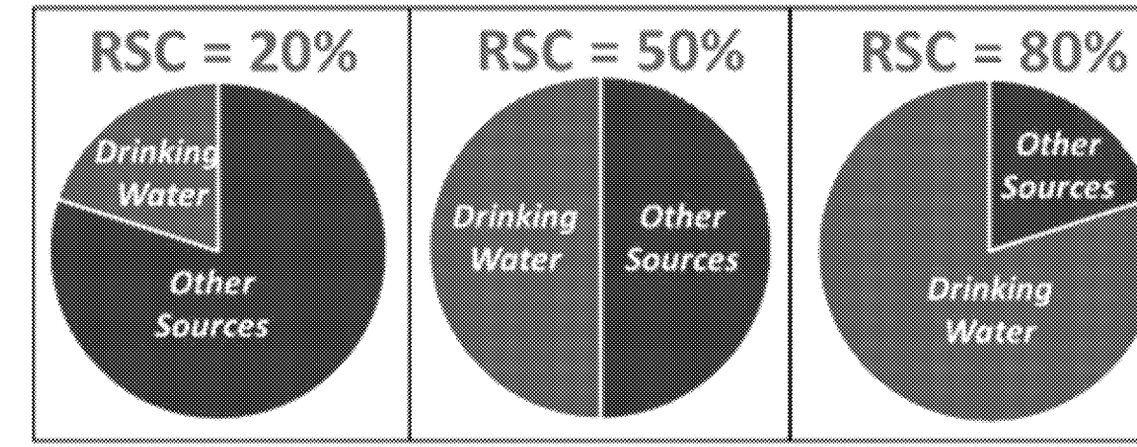


Exposure Assumptions in State Guidelines: Relative Source Contribution (RSC)

Drinking Water Guideline (ng/L) =

$$\frac{\textbf{Reference Dose (ng/kg/day)} \times \textbf{Relative Source Contribution (\%)}}{\textbf{Water Ingestion Rate (L/kg/day)}}$$

- Percent of total exposure assumed to come from drinking water.
  - Accounts for non-drinking water exposures (e.g. food, consumer products).
- Total exposure from drinking water + other sources should not exceed **Reference Dose**.
- ↑ RSC ⟶ ↑ drinking water guideline.
- **Default RSC:** ***20% (3 states).***
- **Chemical-specific RSC:**
  - Can be developed if data are available.
  - 20% to 80% (per USEPA guidelines).
  - NHANES serum PFAS data (95th percentile)
    - Has been used to represent non-drinking water exposures in general population.
  - ***50% (3 states); 60% (1 state).***



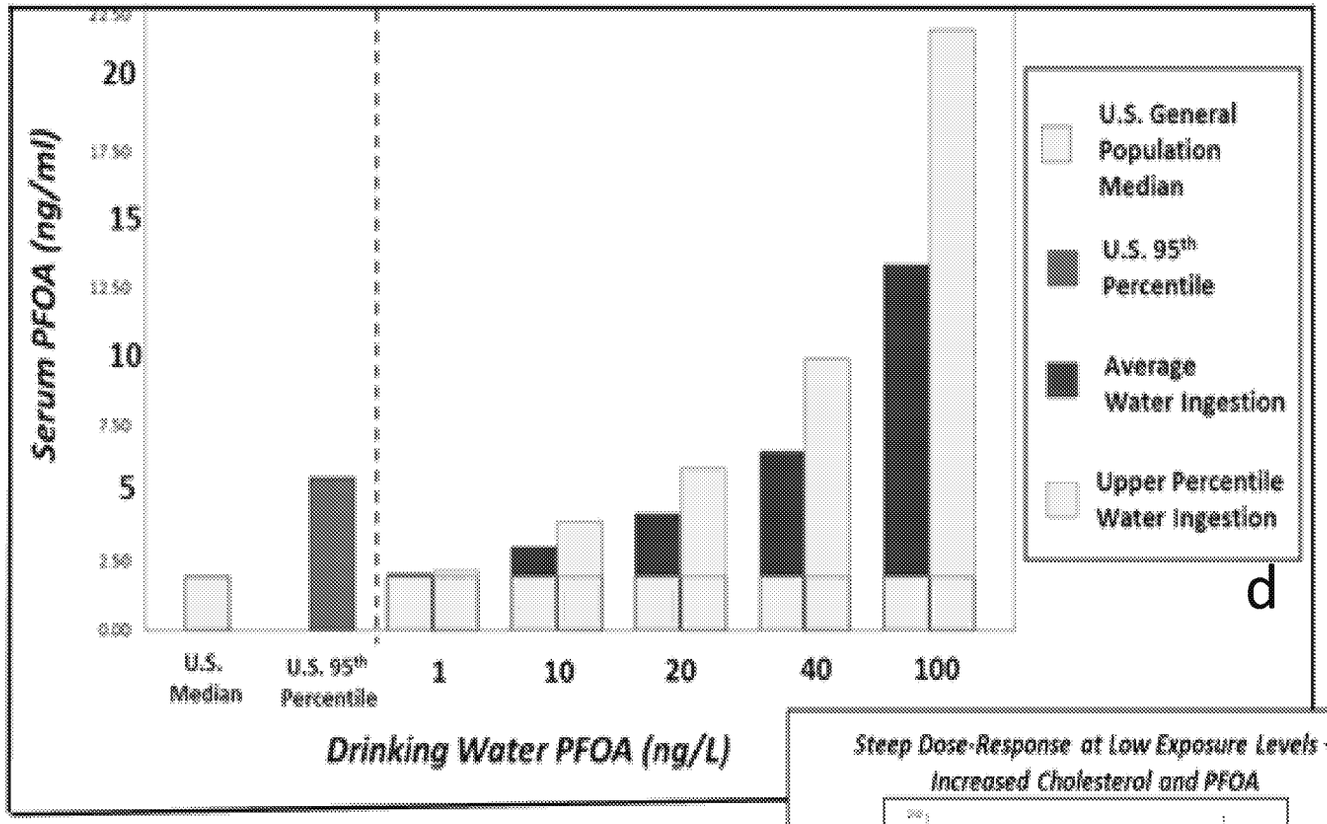
PFOA: USEPA & State Reference Doses, Exposure Assumptions & Drinking Water Guidelines

	EPA	MA	VT	NJ	MN	MI	NH	NY
Reference Dose (ng/kg/day)	20	5	20	2	18	3.9	6.1	1.5
Ingestion Rate or Exposure Model	0.054 L/kg/day *Lactating woman (80th %)*		0.175 L/kg/day *Infant (0-1 yr; 95th %)*	0.029 L/kg/day *Default adult (upper %)*	Modeled: • *Prenatal exposure.* • *Breast milk - 1 yr.* • *Followed by lifetime drinking water exposure.*			Not specified *(0.029 - 0.175 L/kg/day considered)*
Relative Source Contribution	20%				50%			60%
Guideline (ng/L)	70	20	20	14	35	8	12	10

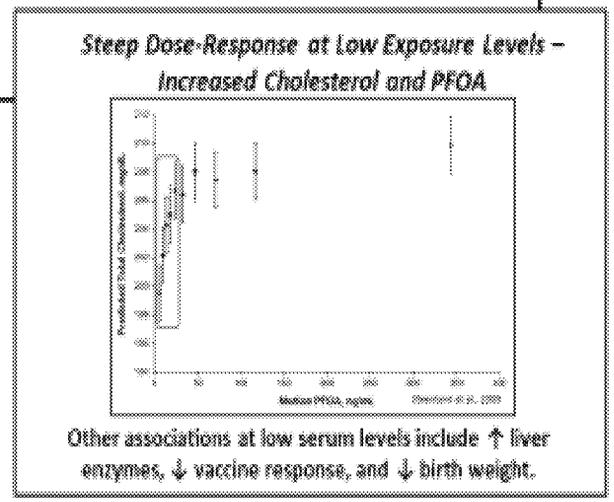
PFOS: USEPA & State Reference Doses, Exposure Assumptions & Drinking Water Guidelines

	EPA	MA	VT	NJ	MI	MN/NH	NY
Reference Dose (ng/kg/day)	20	5	20	1.8	2.9	3	2
Ingestion Rate or Exposure Model	0.054 L/kg/day *Lactating woman (80th %)*		0.175 L/kg/day *Infant (0-1 yr; 95th %)*	0.029 L/kg/day *Default adult (upper %)*	Modeled: • *Prenatal exposure.* • *Breast milk - 1 yr.* • *Followed by lifetime drinking water exposure.*		Not specified *(0.029 - 0.175 L/kg/day considered)*
Relative Source Contribution	20%				50%		60%
Guideline (ng/L)	70	20	20	13	16	15	10

State Guidelines: Consideration of Increase in Serum PFAS Levels



- At least **4 states** compare serum PFAS levels associated with human health effects to serum levels predicted from drinking water exposure.
- Increase in serum PFAS level:
  - *Can be predicted from Clearance Factor and drinking water ingestion rate.*
  - *Consistent with empirical data from exposed communities.*
- These 4 states conclude that **serum PFAS levels predicted from USEPA Health Advisory (70 ng/L) are well above those associated with several health endpoints in human epidemiology studies.**



State Guidelines: Application to Individual or Total Long-Chain PFAS

- 6 states apply guidelines to long-chain PFAS **individually**.
- 3 states apply guidelines to **total of 5 or 6 long-chain PFAS** based on:
  - *Similar structures; Long human half-lives; Generally similar toxic effects.*

	PFOA	PFOS	PFNA	PFHxS	PFHpA	PFDA	*Total?*	PFBA	PFHxA	PFBS	GenX
EPA	70	70	---	---	---	---	***Yes (2)***	---	---	---	---
CA*	5.1	6.5	---	---	---	---	***No***	---	---	---	---
CT	70	70	70	70	70	---	***Yes (5)***	---	---	---	---
MA	20	20	20	20	20	20	***Yes (6)***	---	---	2000	---
MI	8	16	6	51	---	---	***No***	---	400,000	420	370
MN	35	15	---	47	---	---	***No***	7000	---	2000	---
NH	12	15	11	18	---	---	***No***	---	---	---	---
NJ	14	13	13	---	---	---	***No***	---	---	---	---
NY	10	10	---	---	---	---	***No***	---	---	---	---
NC	---	---	---	---	---	---	***---***	---	---	---	140
VT	20	20	20	20	20	---	***Yes (5)***	---	---	---	---

* Notification Levels; Response Levels are based on USEPA Health Advisory of 70 ng/L for total PFOA + PFOS

Summary & Conclusions

- Since 2016, 8 states have developed drinking water guidelines for PFOA & PFOS below the USEPA (2016) Health Advisories of 70 ng/L.
- The state guideline values range from 5.1 – 35 ng/L for PFOA and 6.5 – 20 ng/L for PFOS.
- These recent state guidelines are 1 to 4 orders of magnitude lower than almost all pre-2016 USEPA and state PFOA and PFOS guidelines.
- Both toxicity and exposure considerations are important in determining the guideline values.
- Almost all of the state guidelines consider toxicological effects that are more sensitive than those used by USEPA.
- All of the state guidelines use serum PFAS level as the dose metric, and all use a Clearance Factor to relate serum PFAS level to human administered dose.
- Application of drinking water guidelines to individual long-chain PFAS vs. total long chain PFAS is a major difference among states.

Thank you!

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EXTRA SLIDES

Relationship Between Drinking Water and Increased in Blood Serum Concentrations for Long-Chain PFAAs

- **Clearance factor** (CL) - relates external dose to blood serum level.
  - PFOA (Lorber & Egeghy, 2011): PFOS (USEPA, 2016).
  - CL (L/kg/day) = Volume of Distribution (L) x (ln 2 ÷ Half-life [days])
- Combine clearance factor with **average water ingestion rate** (USEPA Exposure Factors Handbook) to relate drinking water concentration to increase in serum level.

$$\text{Dose } (\mu g/kg/day) = \text{Serum Conc. } (\mu g/L) \times \text{CL } (L/kg/day)$$

$$\text{Dose } (\mu g/kg/day) = \text{Drinking Water Conc. } (\mu g/L) \times \text{Ingestion Rate } (L/kg/day)$$

$$\text{Serum:Drinking Water Ratio} = \frac{\text{Serum Conc. } (\mu g/L)}{\text{Drinking Water Conc. } (\mu g/L)} = \frac{\text{Ingestion Rate } (L/day)}{\text{CL } (L/kg/day)}$$

- **PFOA** - Predicted serum:drinking water ratios for increase in serum levels:
  - ***114:1*** *- average water consumption.*
  - ***200:1*** *- upper percentile water consumption.*
- Ratio of **>100:1 supported by empirical data** from several studies over a wide range of drinking water levels (<10 ng/L to >10,000 ng/L).
  - *Several locations – Little Hocking, Ohio; other Ohio & West Virginia C8 Study sites; Minnesota; Hoosick Falls, NY.*
- **Higher ratios** predicted for PFOS, PFNA & other PFAAs with longer half-lives.

PFOA - Delayed Mammary Gland Development as Basis for NJ RfD

- **Sensitive** – Occurs in offspring at doses/serum levels **below those that increase offspring liver weight.**
- **Well established** - 9 mouse studies; from gestational and/or lactational exposure.
  - *Only one negative study, which has problematic issues.*
  - *Differing mouse strain susceptibility consistent with toxicokinetic differences.*
- **Adverse** - Structural changes persist until adulthood.
- **Human relevance** – No reason to discount based on mode of action.
- Insufficient data to make conclusions about effects on lactational function.
  - *Evaluated in only one study.*
  - *Several **human studies** associate PFOA with ↓ duration of breastfeeding.*

PFOA: Increased Liver Weight as Basis for NJ RfD

- **Well established** effect in non-human primates and rodents.
- Most **sensitive effect** with serum data needed for dose-response analysis, except mammary gland delay.
- Increased liver weight and/or hepatocellular hypertrophy **co-occurred with and/or progressed** to more severe hepatic effects:

  Example: *Chronic rat study suggests "progression of lesions… from hepatocellular hypertrophy to fatty degeneration to necrosis followed by regenerative hyperplasia" (Butenhoff et al., 2012).*

- From Hall et al. (2012) criteria (cited by USEPA):

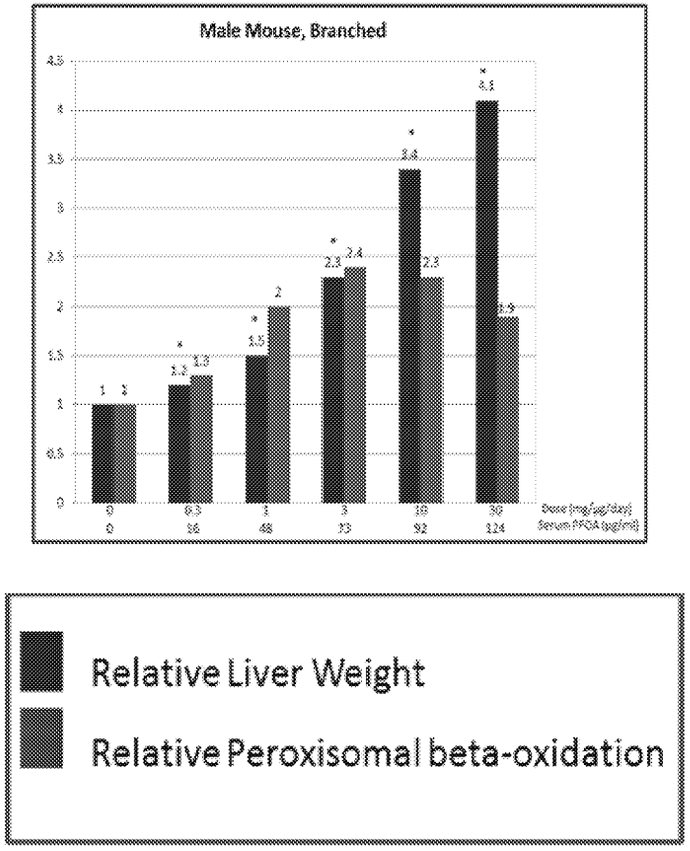
  "[Increased liver weight and hepatocellular hypertrophy] may be reversible if the anticipated duration of exposure is short, while ***progression to more severe hepatic effects*** *may occur from* ***longer exposures to the same dose****…. In this case, the* ***combination of dose level and duration of exposure****….. would now be considered* ***adverse****."*

- Reversibility is **not relevant** to chronic exposure duration of MCLs.

PFOA: Mode of Action for Hepatic Effects

- Primary issues:
  - *Human relevance of rodent effects.*
  - *Role of PPAR-α in **non-carcinogenic** hepatic effects.*
- Extensive review of data from:
  - *Non-human primates (monkeys),*
  - *Standard rodent strains.*
  - *PPAR-alpha null ("knockout") mice.*
  - *Mice with humanized PPAR-alpha.*
  - *Human tissues.*
  - *In vitro studies.*
- ***Overall conclusion:*** **Non-carcinogenic hepatic effects of PFOA are relevant to humans for the purposes of risk assessment.**

Example of Approach Used

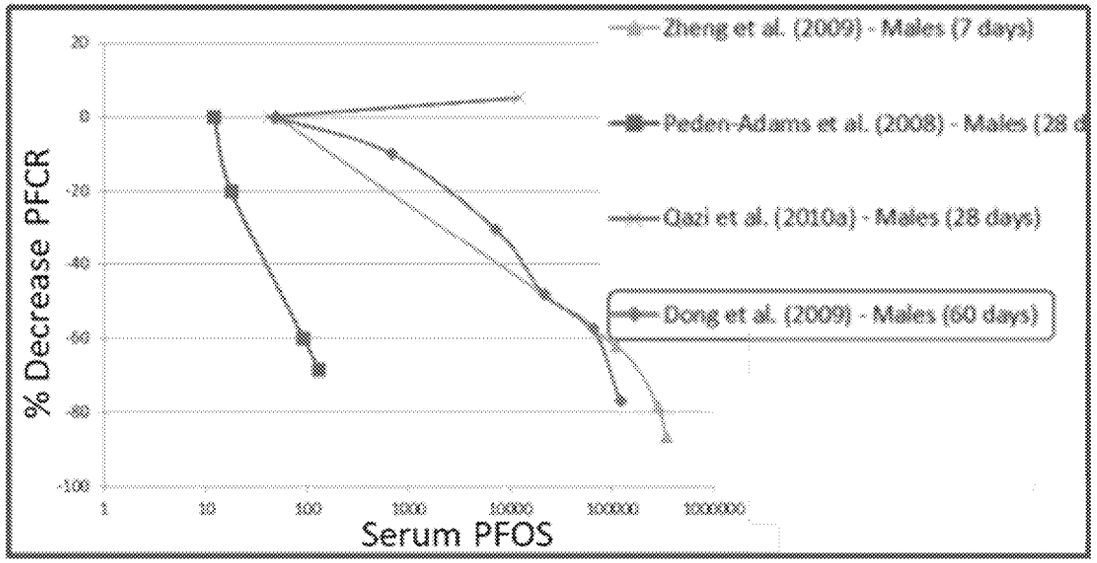


NJ DWQI, 2017

PFOS: Decreased Plaque Forming Cell Response as Basis for NJ RfD

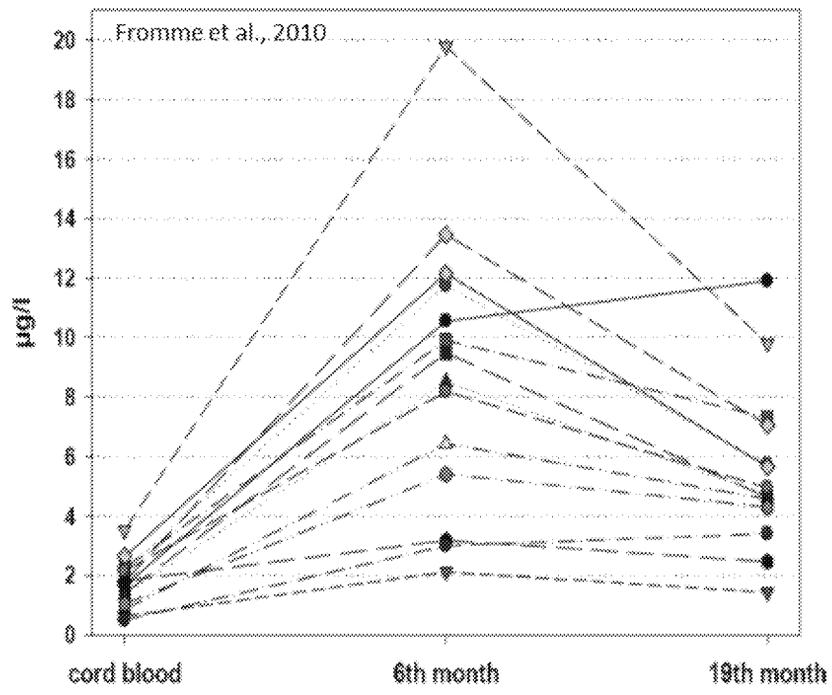
(Pachkowski et al., Env. Research, 2019)

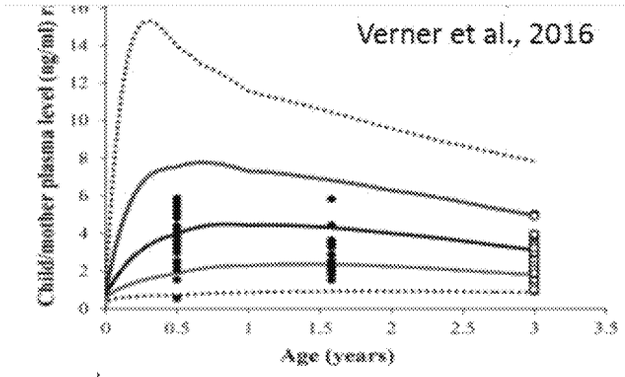
- NJ Reference Dose (RfD) of 1.8 ng/kg/day based on **decreased plaque forming cell response** in male mice exposed for 60 days (Dong et al., 2009).
  - Measures antibody response to foreign antigen.
  - More sensitive than ↓ rat pup weight used for USEPA RfD (20 ng/kg/day).
- **Well established** – 4 positive studies; only 1 negative study.
  - Study with lowest LOAEL was not used for RfD.
- No reason to discount human relevance.
- Supported by **human associations:**
  - Decreased **antibody response to vaccines:** analogous human effect.
  - Increased incidence of **infectious disease**.

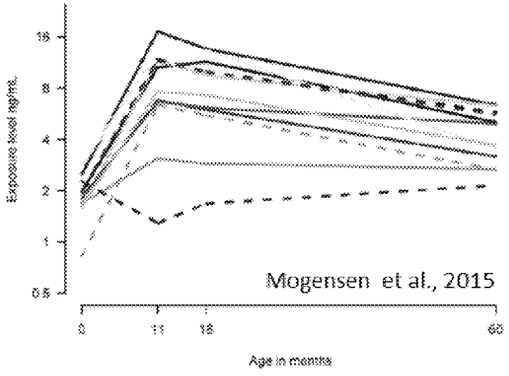


Increases of Long-Chain PFAAs in Serum Are Greater in Infants - Example: PFOA

- Higher exposures - from breast milk or formula:
  - *PFAA levels in breast milk similar or higher than in maternal drinking water.*
  - *Ingest much more fluid per body weight than older individuals.*
- Similar data for other long-chain PFAAs.
- Sensitive subpopulation for developmental & other short-term effects.







Comments

C. Gloria Post: I hope I presented your California information correctly!

C. Elaine Khan: Yes you did, Gloria. Thank you!

C. Gloria Post: Good!

State and Tribal Hot Topics

C. Shamima Akhter: This is the State and Tribal Hot Topics session. Similar to previous FSTRAC Webinars, this will be a round-robin session. We will be asking you for your hot topics during the go-around. We would like to ask you to provide the hot topics that are specific to your state or tribe that might be of interest to other participants. So that we may hear as many hot topics as possible, we ask that each state or tribal agency briefly discusses the two or three topics that are most important to your state or tribe.

We will call on each tribe and state agency registered for this webinar. Each representative will have approximately 5 minutes to describe their hot topics. To ensure that each tribe and state agency has a chance to describe their hot topics, we kindly ask that you stay on topic. If your topics require a more detailed discussion, please let us know and EPA will follow up with you at a later time. We will include all hot topics in the webinar summary and post it to the FSTRAC SharePoint site after the webinar.

Just as a reminder: Before you speak, please press #6 on your phone to override the force mute.

The following tribes and state agencies were called upon for hot topics and suggestions for future webinar topics:

- Pueblo of Sandia Environment Department
- Lac du Flambeau Band of Lake Superior Chippewa Indians
- Alaska Department of Environmental Conservation
- California Office of Environmental Health Hazard Assessment

  C. Elaine Khan: Thanks, Gloria, for going over our notification level recommendations so well. It is a hot topic in California right now because we have set those notification levels fairly low. They are some of the lowest numbers in the nation. At the same time, the Water Board did ask us to develop our Public Health Goals (PHGs) for those two chemicals, so that is the first step of developing regulatory standards. That could take some time, but we are trying to get these done as quickly as possible so the Water Board can start using the information to develop their MCLs.

  The other thing I wanted to add to what Gloria said about our notification levels or reference levels that we've developed is that although the National Toxicology Program (NTP) study report is going to be released fairly soon for peer review, we went ahead and used their data that were posted online. We felt very comfortable using the data because they were very well vetted. We had one of the NTP pathology leads come and speak with us on our webinar that we hosted on Nov 15th. He went over all the steps of review that the data had undergone so we are very comfortable with those data. We are proceeding with developing those PHGs and are looking at the other PFAS of interest.

California's Water Board just released an interactive tool to take a look at what they've found in early monitoring so far and they are using those data to prioritize which PFAS they want to look at next for potential notification level recommendations.

Finally, another chemical that's come up is 1,4-dioxane. We've been asked by our Water Board to come up with a PHG for it.

- California State Water Resources Control Board
- Colorado Department of Public Health and Environment
- Connecticut Department of Environmental Protection
- Connecticut Department of Public Health
- Georgia Department of Natural Resources
- Idaho Department of Environmental Quality
- Illinois Department of Public Health
- Indiana Department of Environmental Management

  C. Eileen Hack: My update is more of a status report on some of the standards, guidance, and monitoring programs that we are currently working on. Our current metals rulemaking will include adopting the 2016 national recommended water quality criteria for selenium. We plan to publicly notice a draft rule for preliminary adoption in April 2020. We have developed and are finalizing implementation guidance for entities regarding data needs to investigate selenium in fish tissue in the water column to allow IDEM to determine if permits are needed or to support derivation of site-specific water column criterion elements using a performance-based bioaccumulation factor approach. We are developing guidance for the intermittent water column criteria element.

  We're still fumbling around with PFAS. I've learned a lot, and I appreciate everybody's presentations today. We still are developing a strategy to assess PFAS. We have a committee that's looked at potential source areas, and we are developing pilot programs for sampling.

  Finally, we are working with EPA on a pilot project to develop state-specific numeric nutrient criteria for our lakes and reservoirs and specifically modeling cyanobacterial biovolume and microcystins to protect recreational waters with the assessment for protecting children from microcystins

- Iowa Department of Natural Resources

- Kentucky Division of Water

- Maine Center for Disease Control & Prevention

- Massachusetts Department of Environmental Protection

  C. Diane Manganaro: As Gloria summarized very well, Massachusetts is working toward finalizing a groundwater standard for our state hazardous waste program proposed at 20 ppt for a group of six PFAS compounds. We are also working toward a proposed drinking water standard. Massachusetts is interested in learning more about the impact of PFAS air emissions on surface drinking waters, the impact of leaching of composting biosolids to surface waters and groundwaters, and the ever-expanding list of PFAS compounds of concern.

  We've been very involved in monitoring of drinking water supplies in conjunction with aerial spraying of mosquitocides in response to an outbreak of eastern equine encephalitis in the late summer and fall that resulted in a number of cases in humans, including a number of fatalities. A number of spraying events were conducted using Anvil® 10+10, which is a combination of two ingredients, Sumithrin® (10%) and piperonyl butoxide (PBO) (10%). Massachusetts did pre- and post-monitoring of public water systems and other surface waters to evaluate residual concentrations of Sumithrin® and PBO as well as evaluating potential impacts to humans and ecological receptors. Typically, these outbreaks last for several years before dying out. We are anticipating that we will be back into it next year, and we're trying to plan. We are discussing issues such as any new human health toxicity and ecological information on Sumithrin®, pyrethroids in general, and PBO beyond information presented by EPA's Office of Pesticides Programs, anything on efficacy, the impact of adulticiding versus larviciding, the frequency of sampling next year based on what we found this year, and also potential impacts on benthic invertebrates that really have not been well characterized. We would be interested in hearing from other states who have gone through similar issues and who may have identified potentially updated information on human and ecological toxicity what approach they've taken and the extent of sampling.

- Michigan Department of Environmental Quality

- Minnesota Department of Health

  C. Katie Fallace: Staff at MDH are working on a manuscript that focuses on manganese in drinking water and infant formula. The paper will include a discussion of MDH's health-based guidance for manganese, the results of a monitoring project looking at manganese occurrence in drinking water including private wells, and more. Hopefully, that will be out next year.

  MDH is beginning a special project that focuses on disinfection byproducts. This project is in the scoping phase and some of MDH staff are working to develop its initial focus, so there are no documents to share at this time. We would be interested

in hearing how EPA and other states have studied and addressed this group of chemicals.

MDH has recently updated our MDH Water Guidance and Additivity Calculator. The updates were made to include new water guidance values and improve the overall ease-of-use. The calculator can be downloaded from our website here: https://www.health.state.mn.us/communities/environment/risk/guidance/gw/table.html.

- Minnesota Pollution Control Agency
- Missouri Department of Health and Senior Services
- New Hampshire Department of Environmental Services
  - **C.** Jonathan Ali: New Hampshire's hot topic is planning for PFAS surface water standards. In early January, the New Hampshire Department of Environmental Services will be submitting a plan for developing surface water criteria for certain PFAS. This includes PFOA, PFOS, perfluorohexanesulphonic acid (PFHxS), and perfluorononanoic acid (PFNA). The plan will include human health and aquatic life use criteria. NHDES is aware of the Interstate Technology and Regulatory Council's (ITRC's) surface water work group and has collaborated with Vermont on this plan. If other agencies feel they have data to share related to surface water criteria for PFAS, we'd appreciate any additional information. Point of contact is Jonathan Ali, jonathan.ali@des.nh.gov.
  - **C.** Mary Butow: New Hampshire is currently reviewing information on three DBPs for potential Ambient Groundwater Quality Standard (AGQS) updates.
  - **C.** James Jacobus: Mary, thank you for sharing that information.
- New Jersey Department of Environmental Protection
- New York State Department of Environmental Conservation
- New York State Department of Health
- Suffolk County Department of Environment and Energy, New York
- North Carolina Department of Environmental Quality
- Ohio Environmental Protection Agency
  - **C.** Audrey Rush: I wanted to extend my thanks for having these webinars on a regular basis. I find it very helpful to hear all the latest ongoing projects related to risk assessment and water quality.

This week, Ohio EPA just released its *Per- and Polyfluoroalkyl Substances (PFAS) Action Plan for Drinking Water* (https://epa.ohio.gov/Portals/28/documents/pfas/PFASActionPlan.pdf). We're canvassing the state, approximately 1,500 public water systems, for PFAS. It's an aggressive schedule. That was just released on Monday. It pretty much picks up the same action levels as U.S. EPA or ATSDR. It's a 4-page action plan. Right now, we have no plans for fish tissue or surface water immediately. Our first priority is to canvass the public water supplies.

The second thing that just happened today is that we have been working diligently to update our human health criteria for ambient water quality with EPA's 2015 updated criteria. We also incorporate the Ohio River Valley Water Sanitation Commission (ORSANCO) standards into our rules. Our Ohio River rules haven't been done since 2002, so they were long overdue. We were about to file the final rule, and they've been thwarted. We're tabling them due to comments we received from a number of organizations that have commented the same on other states trying to do human health criteria. Basically, they are questioning the EPA inputs, and they want us to develop state-specific standards. This is a common thing with states trying to develop human health criteria using EPA's 2015 updated criteria. Now we find ourselves in the same position. It's quite frustrating, but we'll get through it.

Biosolids is a hot topic in the state. We've had some press related to it. There is a very vocal group of people who are living next to biosolids applications fields. In relation to the Office of Inspector General (OIG) report, there's been a lot of misinformation and a lot of misunderstanding about real or perceived risks of these emerging contaminants in biosolids.

- Oregon Health Authority

  C. David Farrer: We recently were able to get some additional resources in our drinking water program, and we have been able to review old Unregulated Contaminant Monitoring Rule (UCMR) data in Oregon. We found historical cases where manganese and bromomethane were above EPA Health Advisory Levels in the finished water of some public water systems. We are now preparing letters to these public water systems asking them to retest and providing messaging information for their customers.

  Toxics Free Kids –This is a program that the Oregon Legislature assigned to the Oregon Health Authority to implement that requires manufacturers of children's products distributed for sale in Oregon to report to OHA whether any of their products (and which ones) contain any of 68 chemicals of high-priority concern for children's health (and which ones) they are selling in Oregon every 2 years. If a high-priority chemical is still in a product after the third reporting cycle, they must:

  - Document removal of the chemical from the product.
  - Document that they have substituted the high-priority chemical with an inherently less hazardous one with an accompanying Greenscreen hazard assessment verifying that the substitute is less inherently hazardous.

    - Seek a waiver from the requirement by submitting an alternatives assessment or a quantitative exposure assessment verifying that either no substitutes are feasible or that the priority chemical does not migrate from the product under normal use and foreseeable abuse conditions.

  - Cleaner Air Oregon–While Oregon DEQ is the main implementer of these rules, OHA has been a close consulting partner. This is a new regulatory program in Oregon that requires industrial point sources of air toxics emissions to:
    - Report their emissions of 600+ air toxics to DEQ.
    - Assess risk to the most impacted receptors from those emissions. Only a 259-chemical subset of the 600+ reporting chemicals are included in the risk assessment because those are the only ones for which we have toxicity reference values.
    - Reduce emissions if risk to most impacted receptors are above risk action levels established in rule.

    For Cleaner Air Oregon, we are currently working on evaluating the first few risk assessments and emissions inventories that have been submitted and a set of rules that would lower the noncancer risk action levels for a subset of air toxics that are expected to have developmental or other severe health effects.

- Pennsylvania Department of Environmental Protection

- Pennsylvania Department of Health

- South Carolina Department of Health and Environmental Control

  C. Sandra Snyder: South Carolina Department of Health and Environmental Control is currently assessing surface and groundwater for PFAS, dealing with a materials processing facility on fire (but under control) and a public health crisis for mumps outbreak at the College of Charleston.

  Also, we are interested in seeing a white paper on risk-based exposure limits for contaminants in surface soil of passive-use parks. For example, green space quads in office/apartment complexes, walking trails, or festival grounds. At present, all they have to screen against are residential use Regional Screening Level (RSL) numbers, which logically don't apply.

- Texas Commission on Environmental Quality

- Utah Department of Health

- Vermont Department of Environmental Conservation

- Vermont Department of Health

- Washington State Department of Health
- Wisconsin Department of Health Services
- Wisconsin Department of Natural Resources
  - **C.** Meghan Williams: For Wisconsin DNR, our hot topics include PFAS surface water criteria development and implementation of EPA's harmful algal blooms (HABs) criteria.
- Wyoming Department of Environmental Quality

C. Kofi Asante-Duah: Great forum! Thanks to all for sharing, etc.!!

C. Shamima Akhter: Thank you all for joining us today. As we mentioned, we will post all the presentations, hot topics, and the meeting summary to the SharePoint site and let you know when they are there. We will provide you the link and log-in information to view the files. If you have any additional questions, please contact the speakers directly. Thank you so much, and goodbye.

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Appendix A.

FSTRAC Webinar Registration List

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Appendix B.

FSTRAC Webinar Speaker Bios

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1. **HECD Accomplishments and Workplan for FY 2020 – Betsy Behl, Director of the Health and Ecological Criteria Division, OW/EPA**
   Ms. Elizabeth (Betsy) Behl is the Director of the Health and Ecological Criteria Division (HECD) in the Office of Science and Technology in the Office of Water at EPA. HECD, is responsible for the national Water Quality Criteria program and regulation of contaminants in biosolids under the Clean Water Act (CWA), and science support for national primary drinking water regulations under the Safe Drinking Water Act (SDWA). CWA support includes development of national Ambient Water Quality Criteria (304(a)) to protect aquatic life and human health (including recreational uses) from nutrients, toxic substances and microbial contaminants. SDWA support includes development of non-regulatory Health Advisories and Benchmarks containing health effects information on protective levels of pollutants in drinking water. HECD provides OGWDW with support for regulatory activities under SDWA including the six-year review of regulated contaminants, regulatory determinations, the unregulated contaminated monitoring rule, and the candidate contaminant list. In addition, HECD supports state development of biocriteria programs, and regional support for biological evaluations of endangered species.

2. **Michigan Taking Action on PFAS – Steve Sliver, Michigan PFAS Action Response Team**
   Mr. Steve Sliver was named Executive Director of the Michigan PFAS Action Response Team (MPART) in February 2019. He is responsible for coordinating Michigan's unique, multi-agency approach to address per- and polyfluoroalkyl substances contamination across the state. A 32-year veteran of state government, he is the former assistant director of the Michigan Department of Environment, Great Lakes, and Energy (EGLE) Materials Management Division, responsible for promoting recycling and waste utilization, pollution prevention, ensuring the proper management of materials under the hazardous waste and liquid industrial by-products, solid waste, scrap tire, medical waste, and e-waste programs, and protecting the public and environment from the hazards associated with radioactive materials. Steve obtained his bachelor's degree in environmental engineering from Michigan Technological University in 1985.

3. **Development of Draft Human Health Benchmarks for Pharmaceuticals – Colleen Flaherty, Deputy Director of the Health and Ecological Criteria Division, OW/EPA**
   Ms. Colleen Flaherty is the Deputy Director of the Health and Ecological Criteria Division in the EPA's Office of Water. Colleen provides leadership on issues related to water quality criteria, drinking water health advisories, biosolids, and emerging contaminants. Colleen graduated from the University of Wisconsin-Madison with B.S. degrees in Biology and Zoology and an M.S. in Zoology (Aquatic Ecology).

4. **The Effect of DBP Exposures on the Risk of Congenital Anomalies and Fetal Growth Restriction: New Epidemiological Study Findings – Michael Wright, ORD/EPA**
   Dr. Michael Wright works for the U.S. Environmental Protection Agency's Center for Public Health and Environmental Assessment, which is part of the Office of Research and Development. He earned his Sc.D. in Environmental Health from the Harvard School of Public Health. Dr. Wright has conducted epidemiologic studies on the relationship between waterborne contaminants and adverse reproductive outcomes, respiratory effects and neurodegenerative disorders. In addition, he has conducted exposure assessment research,

some of which quantifies the magnitude of bias due to exposure misclassification in epidemiologic settings. Dr. Wright has served on several advisory committees and technical panels on various topics including drinking water quality, epidemiology and cumulative risk assessment.

5. **Basis of States' Drinking Water Guidelines for PFAS – Gloria Post, Research Scientist, New Jersey Department of Environmental Protection**
   Dr. Gloria Post has been a Research Scientist in the New Jersey Department of Environmental Protection (NJDEP) Division of Science and Research since 1986. Her responsibilities include human health risk assessment and toxicology support for NJDEP programs. She is a member of the New Jersey Drinking Water Quality Institute, an advisory body that recommends drinking water standards to NJDEP, including for several PFAS. Dr. Post and her colleagues have focused on the evaluation of PFAS in drinking water for over 15 years. She is the first author of four publications on this topic, and she is also the lead writer of the Health Effects section of the forthcoming Interstate Technical and Regulatory Council (ITRC) document on PFAS. She has been a board-certified toxicologist (DABT) since 1990, and she holds an A.B. with honors in Biochemical Sciences from Princeton University and a Ph.D. in Pharmacology from Thomas Jefferson University.

Summary

Federal-State Toxicology and Risk Analysis Committee (FSTRAC) Webinar

September 24, 2020

"Safe and Clean Water"

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Thursday, September 24, 2020

Welcome and Introduction.....**Shamima Akhter,** OW/EPA

HECD Updates.....**Betsy Behl,** OW/EPA

Determination of Data-Derived Exposure Values and Uncertainty Factors for the Derivation of Health Protective Drinking Water Guideline for Manganese..... **Mathieu Valcke**, Institut National de Santé Publique du Québec (INSPQ)

EPA's Draft Harmful Algal Bloom (HAB) and Hypoxia Events of National Significance (HHENS) Policy .....**Lesley D'Anglada,** OW/EPA

Comparative Potency Evaluation for PFAS Drinking Water Values .....**Sandra Baird,** Massachusetts Department of Environmental Protection (MassDEP)

Thoughts/Suggestions on a Potential Face-to-Face Meeting..... **Ruth Etzel,** OW/EPA and **State and Tribal Attendees**

Appendix A. FSTRAC Webinar Registration List

Appendix B. FSTRAC Webinar Speaker Bios

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Welcome and Introduction

Dr. Shamima Akhter from the Office of Science and Technology's Health and Ecological Criteria Division (OST/HECD) in the U.S. Environmental Protection Agency (EPA). Office of Water (OW) welcomed everyone to the Fall 2020 Federal-State Toxicology and Risk Analysis Committee (FSTRAC) webinar.

The mission of FSTRAC is to strengthen relationships and cooperation among EPA, states and tribes through the exchange of technical information primarily regarding water-related human health and risk assessment and also share information on ecological effects related to water quality criteria. The goal of FSTRAC is to share information that supports the development of well-rounded, integrated approaches to effects assessment, risk assessment, risk management, risk communication, and standard-setting for drinking water, groundwater, and surface water contaminants. Additional information about FSTRAC is available on EPA's FSTRAC website (https://www.epa.gov/wqc/federal-state-toxicology-risk-analysis-committee-fstrac).

Dr. Akhter announced that approximately 120 FSTRAC members had registered for the webinar. Currently, there are 257 FSTRAC members; 3 new members have joined FSTRAC since the last webinar held in December 2019. She noted that, for today's webinar, there would be four presentations to be followed by a thoughts and suggestions on a face-to-face meeting session during which states and tribes are encouraged to briefly discuss their thoughts and suggestions.

Dr. Akhter introduced the first speaker, Ms. Betsy Behl, the Director of Health and Ecological Criteria Division (HECD) in EPA OST. Ms. Behl gave a presentation titled "HECD Updates."

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HECD Updates

Elizabeth (Betsy) Behl
U.S. Environmental Protection Agency, Office of Water
Office of Science and Technology, Health and Ecological Criteria Division
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Presented information follows. Please contact the speaker for more information.

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Aquatic Life

Fiscal Year 2020 Accomplishments:

- Published five articles in the Society of Environmental Toxicology and Chemistry (SETAC) journal on metals bioavailability modeling.
- Initiated peer review on the Phase I report of the metals Cooperative Research and Development Agreement (CRADA). with representatives from the metals industry to explore bioavailability models for a number of different metal compounds.
- Provided technical assistance on aluminum criteria implementation materials.
- Began scoping for updated chloride and sulfate criteria.
- Continued developing perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS) aquatic life criteria
    - Completed a problem formulation with the Association of Clean Water Administrators (ACWA) and representative states for the PFOA and PFOS aquatic life criteria.
    - Initiated a literature review for PFOA and PFOS.
- Collaborated with the Department of Defense (DOD) and the Office of Land and Emergency Management (OLEM) at EPA who have the lead in development of benchmarks for per- and polyfluoroalkyl substances (PFAS) for screening for cleanup purposes.
- Held one regional workshop (just last week) on aquatic life criteria for toxics
- Provided support to EPA Regions on Endangered Species Act (ESA) consultations for aquatic life criteria and provided support to EPA Regions and states with development of state aquatic life criteria.

Plans for Fiscal Year 2021:

- Publish the Phase I metals CRADA report
- Begin working on individual models for individual metals.
- Continue making progress on the chloride and sulfate criteria.
- Hold additional regional workshops on aquatic life criteria.
- Continue to support EPA Regions on ESA consultations, and continue to support states and EPA Regions on aquatic life criteria development.
- Continue making progress on the development of PFAS aquatic life criteria.

Biosolids

Fiscal Year 2020 Accomplishments:

- Updated the biosolids website (https://www.epa.gov/biosolids) in July 2020 to improve accessibility.

- Established a biosolids webinar series which is ongoing.
- Collaborated with EPA's Office of Research and Development (ORD) and released a new EPA CompTox Dashboard that includes contaminants found in biosolids.
- Collaborated with EPA ORD on their development of Notice of Intent for National Priorities Grants for Addressing Pollutants Found in Biosolids. This was recently announced on ORD website (Total $6M).

Plans for Fiscal Year 2021:

- Hold a biosolids problem formulation meeting for PFOA and PFOS risk assessment (in November 2021). Announcements for those are about to be sent.
- Hold a National Biosolids Meeting. States will all be invited.
- EPA's Science Advisory Board will evaluate screening models for biosolids.
- Work with ORD to publish an update of pathogen and vector attraction in sewage sludge technical guidance.
- Publish the next biennial review by winter 2020.

Nutrients and Biocriteria

Fiscal Year 2020 Accomplishments:

- Published draft revised nutrient criteria for lakes and reservoirs that addressed three designated uses: source drinking water use, recreational use, and aquatic life use.
    - Interest from 16 states for training or assistance in developing criteria.
- Nutrient Scientific Technical Exchange Partnership & Support (N-STEPS) program supported a variety of different efforts for states to develop numeric water quality criteria or other management efforts.

Plans for Fiscal Year 2021:

- Finalize the numeric nutrient criteria for lakes winter 2020.
- Continue to provide direct technical support to states that are interested in developing lake criteria through N-STEPS.
- Launch N-STEPS Online which takes EPA's guidance for nutrients into the cloud.
- Continue review of water quality standards packages for states.
- Hold additional webinars on nutrient science.
- Conduct a bioassessment program critical elements review in Georgia and New Mexico.

Human Health

Fiscal Year 2020 Accomplishments:

- Developed a problem formulation with ACWA for PFOA and PFOS human health criteria.
- Continued developing toxicity values for GenX chemicals (hexafluoropropylene oxide dimer acid and its ammonium salt).
- Published a Federal Register notice seeking comments on approaches for determining Hypoxia and harmful algal blooms (HABs) events of national significance in fresh waters in October 2019.
- Provided toxicological support to our drinking water program on the preliminary regulatory determinations that were published in December 2019.
- Worked on the Water Reuse Action Plan
- Provided toxicological support to the drinking water program on the Unregulated Contaminant Monitoring Rule (UCMR) and identified new candidates for monitoring in UCMR5.
- Provided toxicological support to develop a list of emerging contaminants for the next Contaminant Candidate List (CCL5).
- Updated the FSTRAC charter.
- Developed preliminary, early draft coliphage recreational criteria.

Plans for Fiscal Year 2021:

- Work with FSTRAC to plan a face-to-face meeting for members.
- Publish a draft policy for comment for determination of Hypoxia and HABs events of national significance in fresh waters.
- Initiate a second peer review of the GenX toxicity values document and publish final GenX toxicity values.
- Evaluate PFOA and PFOS toxicity data published since EPA issued the health advisories in 2016 to determine whether data are adequate to move forward in developing 304(a) criteria for human health.
- External peer review of coliphage criteria.
- Lend support to the drinking water program on the final regulatory determination and follow up work as needed.
- Work on the final list of potential contaminants of emerging concern, the CCL5.
- Initiate work on the 6-year review of regulated chemicals.

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Determination of Data-Derived Exposure Values and Uncertainty Factors for the Derivation of Health Protective Drinking Water Guideline for Manganese

Mathieu Valcke, PhD
Mathieu Valcke, Institut National de Santé Publique du Québec (INSPQ)
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Visuals follow. Please contact the speaker for more information.

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INSPQ INSTITUT NATIONAL DE SANTÉ PUBLIQUE DU QUÉBEC

Centre d'expertise et de référence

Determination of data-derived exposure values and uncertainty factors for the derivation of health protective drinking water guideline for manganese

Mathieu Valcke, PhD.[1,2]

1:INSPQ, Montreal, Quebec, Canada;

2: Université de Montreal School of Public Health

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FSTRAC webinar
September 24th 2020

Institut national de santé publique Québec

International Journal of *Environmental Research and Public Health*

MDPI

Article

Deriving A Drinking Water Guideline for A Non-Carcinogenic Contaminant: The Case of Manganese

Mathieu Valcke [1,2], Marie-Hélène Bourgault [1], Sami Haddad [2], Michèle Bouchard [2], Denis Gauvin [1] and Patrick Levallois [1,3,*]

Int. J. Environ. Res. Public Health 2018, 15, 1293; doi:10.3390/ijerph15061293 www.mdpi.com/journal/ijerph

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Context

- **Manganese (Mn): an essential oligoelement**
  - Cofactor for many enzymes; promotes several others
- **Sources of human exposure**
  - food; drinking water (DW; earth crust ⇒ groundwater);
  - soils; industrial emissions
- **Non carcinogenic neurotoxicant**
  - Inhalation (e.g. manganism in welders)
  - Oral route… less well characterized
    - ✓ Epi + animal data ⇒ neurodevelopmental toxicity through drinking water (DW)

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Context

- **INSPQ's approach to DW guideline determination:**
  - Inventory of available reviews for selection of the most appropriate POD : **Health Canada, WHO, USEPA**, CalEPA (California), **MDH (Minnesota), ATSDR**, ANSES (France)

Institution	Type of POD	Rationale	POD (mg/kg/d)
US EPA (MDH)	Human NOAEL	Estimated UB of daily dietary intake in the average vegetarian adult, 1960 - 1990	0.14
WHO	Human NOAEL		0.183
ATSDR	Human NOAEL		0.16
MDH	Animal LOAEL	Neurobehavioral, motor and cognitive adverse effects in juvenile rats, 2010-2011	25
Health Canada	Animal LOAEL		25

Selection of Point-of-Departure (POD)

⇒ Congruent animal studies for a POD of 25 mg/kg/d, from $Mn_2Cl \bullet H_2O$ administered to neonate rats through drinking water

Study	Postnatal exposure days	Post-natal effect days	Critical effect	Type of POD
Kern et al., 2010	1-21	33 - 46	Decreased learning capacity	LOAEL
Kern et al., 2011	1-21	24	Increased expression of glial acid protein in the prefrontal cortex	LOAEL
Beaudin et al. 2013	1-21 1-400	120 - 150	Decreased fine sensorimotor function	LOAEL

Default, or absence of, uncertainty/adjustment factors

- **Animal-to-human: 10-fold**
  - No data suggesting otherwise
- **Subchronic to chronic: none applied**
  - Short-term (1 year) guideline
  - Prolonged exposure ≠ different LOAEL for the same effect (ATSDR)
    - ✓ Window of suceptibility: homeostatic control and development of the brain
    - ✓ Generally greater LOAELs for other adverse effects

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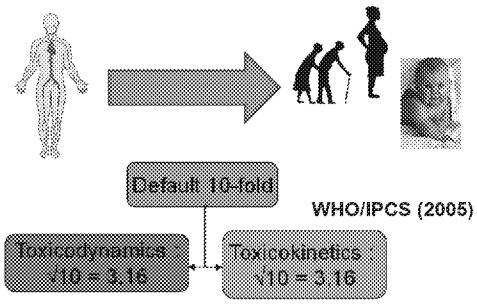
Non-default adjustment factors

- **Human variability**
  - Is the use of a « neonate » POD, in rats, accounts for the adult-to-child interindividual variability in toxicokinetics (TK) in humans ?
    - ✓ YES
  - Do any further variability needs to be accounted for to cover the most sensitive individuals within children?
    - ✓ YES, 1.7-fold



3.16 x 1.7
= 5 (rounded value)

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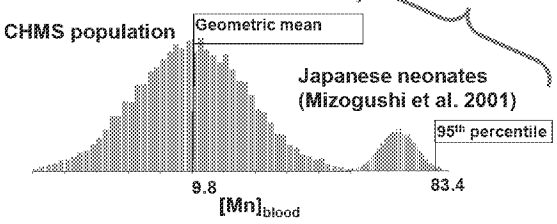
Non-default adjustment factors

- **Human variability:**
  - Animal *vs* human variability in toxicokinetics:
    - ✓ RATS: 80% retention of administered dose in neonate rats, *vs* 5% in pup rats. ≈ 16-fold
    - ✓ HUMANS:

WHO/IPCS (2005) approach ≈ 9-fold

Use of a POD in neonate rats accounts for adult-to-neonate interindividual variability in TK



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Non-default adjustment factors

- Variability of $[Mn]_{blood}$ within sensitive groups

Sensitive group	Central tendency (µg/L)	95th percentile (µg/L)	Ratio	Reference
Neonates	40.4	59.3	1.5	Spencer, 1999
Neonates	56.4	83.4	1.5	Mizogushi et al. 2001
Infants	26.1	57.1	2.2	Park et al. 2013
Iron-deficient children	25.5	44	1.7	Health Canada, 2013
Elderly	9.4	15	1.6	Health Canada. 2016
		MEAN	**1.7**	

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Non-default adjustment factors

- LOAEL-to-NOAEL: 3-fold
  - Compilations of neurodevelopmental neonate rodent studies (ATSDR's ToxProfile).
  - ⇒ For every study, the NOAEL is at the most 3 times lower than the LOAEL.
- Database: 3-fold
  - Existence of a lower LOAEL (11 *vs* 25 mg/kg/d) (Dorman et al. 2000)
  - Unclear significance of the effects studied.

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Uncertainty/adjustment factors: summary

Factor	Type	Value
Human variability	Data-derived	5
Animal-to-human extrapolation	Default	10
LOAEL-to-NOAEL extrapolation	Data-derived	3
Sub-chronic-to-chronic	-	None (1)
Database deficiencies	Data-derived	3
	TOTAL	450

« Customized » TRV: = POD/Total UF

= 25/450

= 56 µg/kg/d

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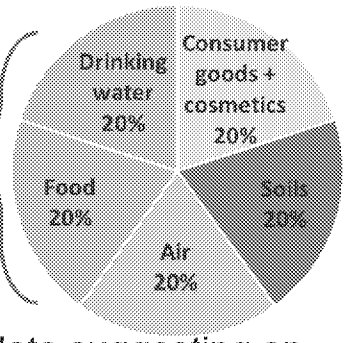
Exposure values: rationale

- Drinking water ingestion rate:

Window of susceptibility (WOS): POD accounts de facto for the concern of protecting the most sensitive individuals	Consideration of the 95th percentile within the WOS: bottled-fed only infants aged < 6-mo. ⇒ **182 mL/day/kg**

- Relative Source Contribution (RSC) :
  - Health Canada, MDH:
    - ✓ Data-based approach (Krishnan & Carrier, 2013)
    - ✓ Solely 2 sources of exposure ⇒ RSC of 50%

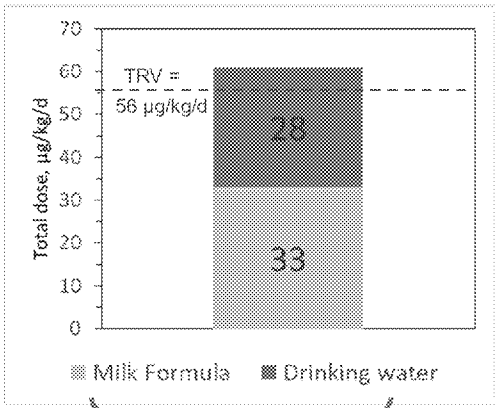


But…

- No data suggesting an RSC < 20% for DW

Exposure values

- Mn in milk formula (Ljung & Vahter 2007; Cockell et al. 2004; Erikson et al. 2006)
  - ✓ Soya: 340±110 µg/L; reduced bioavailability because of adsorption/complexation with other molecules (e.g. phitic acid).
  - ✓ Cow: 100±50 µg/L; 95th = 182 µg/L
- **= 33 µg/kg/d = 60% of TRV**
- **Final retained RSC = 20%**
  - ✓ Total non–DW exposure < 80%
  - ✓ Remaining 40% divided in two eq parts



50% RSC is not protective enough

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Guideline derivation: summary

	INSPQ	Health Canada
POD (mg/kg.d)	25 (LOAEL, rats)	25 (LOAEL, rats)
Total AF/UF	450	1000
ingestion rate (mg/kg/d)	182 (infants ≤ 6 mo.)	107 (7-kg infant, 750 ml/d)
RSC (%)	20	50
DWG (µg/L)	60	120

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Guideline derivation: summary

	INSPQ	Health Canada	US EPA	Minnesota Department of Health	WHO
POD (mg/kg.d)	25 (LOAEL, rats)	25 (LOAEL, rats)	0.14 («NOAEL», humans)	25 LOAEL (rats)	0.183 («NOAEL», humans)
Total AF/UF	450	1000	3	300	3
ingestion rate (mg/kg/d)	182 (infants ≤ 6 mo.)	107 (7-kg infant, 750 ml/d)	29 (70-kg adult, 2L/d)	289 (infants ≤ 1 yr)	33 (60-kg adult, 2L/d)
RSC (%)	20	50	20 (default)	50	20 (default)
DWG (µg/L)	60	120	300	100	400

Conclusion

- Applying a critical review of work done by other institutions constitutes a simple, efficient approach to DWG derivation.
- The proposed DWG for Mn (60 µg/L) is based on the same animal POD as chosen by other institutions, but different uncertainty/adjustment factors and exposure values.
- Original approaches, which differ from the standard default, were used to determine RSC, DW ingestion rate, and adjustment factors for human variability as well as LOAEL-to-NOAEL extrapolation.
- Such approaches might help to open a transparent debate with regard to the appropriate exposure values to be selected for DWG derivation.

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Thanks!

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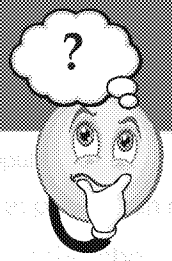
Any questions?...



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Questions and Comments

Q. Diane Manganaro: Does this value apply to infants only or also to the general population?

A. Mathieu Valcke: From the risk management perspective, we can use it for the general population but it is based on the protection of infants. In a situation where there is an exceedance of the 60 μg/L value, there could be advice given for pregnant women and young children to avoid drinking this water, but it would be okay for the rest of the population to keep using it and drinking it. We proposed it as a general population criteria but we transparently expressed that it was based on the protection for the most sensitive ones. Therefore, for the other part of the population, it would be a risk management decision.

Q. Dawn Busalacchi: Was breast milk also evaluated as to manganese content?

A. Mathieu Valcke: We did not look at that specifically because the issue here was to propose a guideline for drinking water, including drinking water that may be used to produce milk formula. From what I have read, manganese can be found in breast milk but usually not at levels as elevated as could be found in milk formula products.

Q. Julius Nwosu: Could you elaborate further why you chose a relative source contribution (RSC) of 50 percent for your study?

A. Mathieu Valcke: We did not use a 50 percent RSC. We used 20 percent. The 50 percent was chosen by Health Canada and the Minnesota Department of Health based on the fact that there were only two sources of exposure (i.e., drinking water and food) to manganese that were available, as they showed. Based on the rationale that I presented to you, we decided to lower it to 20 percent. This was not a default value; rather it was based on evidence that 50 percent appeared too high for us.

EPA's Draft Harmful Algal Bloom (HAB) and Hypoxia Events of National Significance (HHENS) Policy

Lesley D'Anglada, PhD
U.S. Environmental Protection Agency, Office of Water
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Visuals follow. Please contact the speaker for more information.

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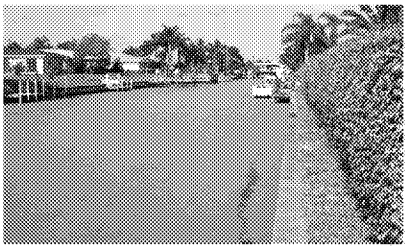
EPA's Draft Harmful Algal Bloom (HAB) and Hypoxia Events of National Significance (HHENS) Policy



Lesley V. D'Anglada, US EPA
FSTRAC Webinar
September 24th, 2020

Objectives

- Provide an overview of HABHRCA
- Describe the *'Events of National Significance'* Amendment
- Provide an overview of the draft policy's development process
- Opportunity for questions

Disclaimer

The views expressed in this presentation are those of the author[s] and do not necessarily represent the views or policies of the U.S. Environmental Protection Agency.

History and Evolution of HABHRCA

- The ***Harmful Algal Blooms, Hypoxia, Research and Control Act*** (HABHRCA of 1998) describes near and long-term comprehensive efforts to prevent, reduce, and control HABs and hypoxia in the United States.
- HABHRCA gives authority to the National Oceanic and Atmospheric Administration (NOAA) to coordinate these efforts and to manage HABHRCA.
- Reauthorized in 2004.
- From 2007 to 2012, NOAA published four HABs and Hypoxia assessments for marine waters and one for freshwaters.

HABHRCA of 2014

- The 2014 reauthorization of HABHRCA extended the scope of the legislation to include:
  - Authority to the EPA to research, forecast and monitor event response to freshwater HABs.
  - Establish an Interagency Working Group (IWG).
  - Include stakeholder engagement.
  - Call-out for Great Lakes Assessment and Progress Report.
- From 2016 to 2018 the IWG published four reports:
  1. Comprehensive National Research Plan and Action Strategy.
  2. Great Lakes Action Plan.
  3. Progress Report on Actions taken from the National and Great Lakes Research Plans and Action Strategies.
  4. Mississippi River/Gulf of Mexico Watershed Nutrient Task Force 2015 Report to Congress.

IWG-HABHRCA

- Purpose:
  - Serve as the implementation arm to advise and assist the Subcommittee on Ocean Science and Technology (SOST).
  - Develop recommendation, reports, assessments, and plans.
  - Interagency coordination on a research agenda to understand the causes, consequences and to reduce the impact of hypoxia and HABs.
- Co-chaired by NOAA, EPA and SOST.
- Representatives from 17 Federal Agencies.
- Meet bi-weekly (calls) and in-person once a year.

HABHRCA of 2017

- On January 2019, Congress reauthorized HABHRCA (issued in 2017) to, among other things:
  - Officially include the Army Corp of Engineers as a member of the IWG;
  - Amend the Scientific Assessments of Freshwater HABs section to complete the assessment not less than once every 5 years instead of every 24 months; and
  - Include a section on Event Response Program for the determination of ***HABs and Hypoxia Events of National Significance (HHENS)***

Hypoxia or Harmful Algal Bloom of National Significance (HHENS)

- What is a HHENS?
  - HABs or hypoxia event that had or will likely have a significant detrimental environmental, economic, subsistence use, or public health impact on an affected State.
- "Considerations" for a determination:
  - toxicity of the harmful algal bloom;
  - severity of the hypoxia;
  - potential to spread;
  - economic impact;
  - relative size in relation to the past 5 occurrences of HABs or hypoxia events that occur on a recurrent or annual basis;
  - geographic scope, including the potential to affect several municipalities, more than one State, or to cross an international boundary.

Hypoxia or Harmful Algal Bloom of National Significance (HHENS) – Cont.

- Designation of a HHENS is at the discretion of the Governor of an affected State, or by the EPA Administrator for freshwaters or NOAA's Secretary for marine waters.
- After a determination, NOAA or EPA are authorized to make funds available, if provided by Congress, to the affected State or local government to assess and mitigate the detrimental environmental, economic, subsistence use, and public health effects of the event.
- The federal share of the cost of any activity may not exceed 50% of the cost of that activity.

Policy Development Process

- Both EPA and NOAA are developing HHENS policies separately:
  - EPA for HHENS in freshwaters
  - NOAA for HHENS in marine waters
- In September 2019, EPA published a FRN requesting public comments on what to consider for determining a HHENS in freshwater.
  - Received 205 comments and two separate letters.
  - In general, commenters supported EPA for the development of a HHENS policy and provided recommendations to prioritize determinations.

Tentative Timeline and Next Steps

- Public Comment on Draft Policy –2021
- Final Policy - 2021

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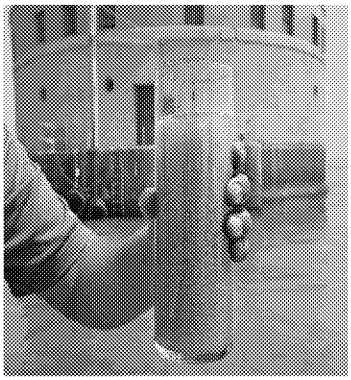

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EPA CyanoHABs Website
https://www.epa.gov/nutrient-policy-data/cyanohabs

Questions and Discussion

Q. Sheila Abraham: So EPA would develop the Hypoxia Events of National Significance (HHENS) for the Great Lakes, not the National Oceanic and Atmospheric Administration (NOAA)? What about estuarine areas?

A. Lesley D'Anglada: Thank you, that's correct. For estuaries and Great Lakes, EPA will make the determination. However, when freshwater systems impact marine systems (like what happened in Florida in 2018), both EPA and NOAA will coordinate to make the determination. So, in cases where both systems are affected, both agencies will coordinate.

Q. Sheila Abraham: I know you cannot share draft policies, but is there a substantive technical difference between the NOAA and EPA policies?

A. Lesley D'Anglada: No, we have the same sections and we try to keep our policies aligned. The biggest difference is that we evaluate the impacts to drinking water. NOAA doesn't have that section but that is a big section in ours. In the criteria we use for making determinations, we included criteria for the evaluation of drinking water impacts. For example, we evaluate the occurrence of toxins in finished drinking water. That's something that NOAA doesn't do. I don't see any other big differences. We are very aligned.

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Comparative Potency Evaluation for PFAS Drinking Water Values

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Visuals follow. Please contact the speaker for more information.

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Comparative Potency Evaluation for PFAS Drinking Water Values

Sandra Baird, Ph.D.
Office of Research and Standards
Massachusetts Department of Environmental Protection

Outline

- Challenges of PFAS
- MassDEP approach
- Relative potency exploration

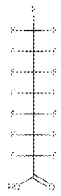
Challenges for Regulating PFAS

- Multiple PFAS are found in drinking water
- People are exposed to different combinations or mixtures of PFAS in water and other media
- Test method EPA 537 identifies 14 PFAS
- PFOA and PFOS have the most information about toxicity, kinetics, exposure
- Variable and more limited toxicity information for the other PFAS that may be detected in drinking water samples

PFAS: Per- and Polyfluoroalkyl Substances

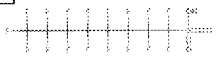
Subgroup of Longer Chain PFAS

# Carbons	EPA Method 537 Analytes	
4	PFBS	Perfluorobutanesulfonic acid
6	PFHxA	Perfluorohexanoic acid
6	PFHxS	Perfluorohexanesulfonic acid
7	PFHpA	Perfluoroheptanoic acid
8	PFOA	Perfluorooctanoic acid
8	PFOS	Perfluorooctanesulfonic acid
9	PFNA	Perfluorononanoic acid
10	PFDA	Perfluorodecanoic acid
11	NMeFOSAA	2-(N-Methylperfluorooctanesulfonamido)acetic acid
11	PFUnA	Perfluoroundecanoic acid
12	NEtFOSAA	2-(N-Ethylperfluorooctanesulfonamido)acetic acid
12	PFDoA	Perfluorododecanoic acid
13	PFTrDA	Perfluorotridecanoic acid
14	PFTA	Perfluorotetradecanoic acid



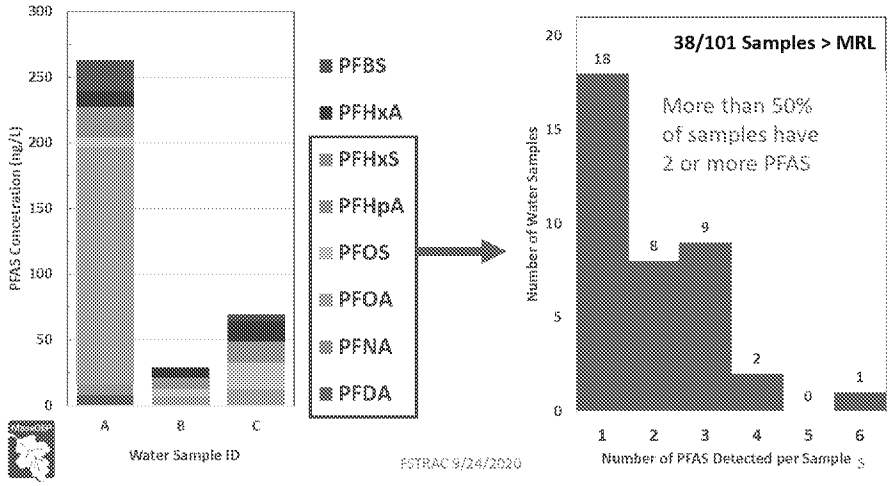
PFOA

PFOS



MassDEP Approach

PFAS co-occur in MA drinking water shown here from early subset of DW samples



MassDEP Approach

The PFAS in this subgroup have similar:

- Structures 8 ± 2 carbons
- Organ systems affected
  - Liver
  - Thyroid
  - Development and Reproduction
- Serum concentrations at LOAELs range 5-77 mg/L
- Half-live estimates in humans (days)

PFOA	PFOS	PFNA	PFHxS
840-1400	1241-2000	900-1540	1716-3100

MassDEP Approach

- Address as a subgroup of PFAS rather than one by one
- Extended USEPA Health Advisory and RfD approach for PFOA and PFOS ----> surrogate toxicity values
- Applied individually and to the sum of any one or more together ----> dose addition

MassDEP Drinking Water Values

- 2018 - established DW Guideline (ORSG) of 70 ppt (ng/L) for 5 PFAS - PFOA, PFOS, PFNA, PFHxS and PFHpA
- January 2020 – revised ORSG to 20 ppt (ng/L) for 6 PFAS - PFOA, PFOS, PFNA, PFHxS, PFHpA and PFDA
- Fall 2020 – MCL of 20 ppt (ng/L) for 6 PFAS - PFOA, PFOS, PFNA, PFHxS, PFHpA and PFDA

ORSG – Office of Research and Standards Guideline

Opportunity to Evaluate PFAS for Relative Potency

National Toxicology Program (NTP) (2018)

28-day toxicity studies for 7 PFAS

# Carbons	Sulfonates	Carboxylates
4	PFBS	
6	**PFHxS**	PFHxA
8	**PFOS**	**PFOA**
9		**PFNA**
10		**PFDA**

Relative Potency Factor Approach

- Quantitative approach for evaluating differences in potency for groups of similarly acting chemicals
- Structurally related congeners, sensitive effect with similar toxicity and mechanistic rationale,
  - PAH Relative Potency Factors for carcinogenicity
- Special case – common well-known mechanism of action, applies across all effects and exposures,
  - Dioxin-like PCBs Toxicity Equivalency Factors (TEF)

NTP (2018) 28-day Bioassay

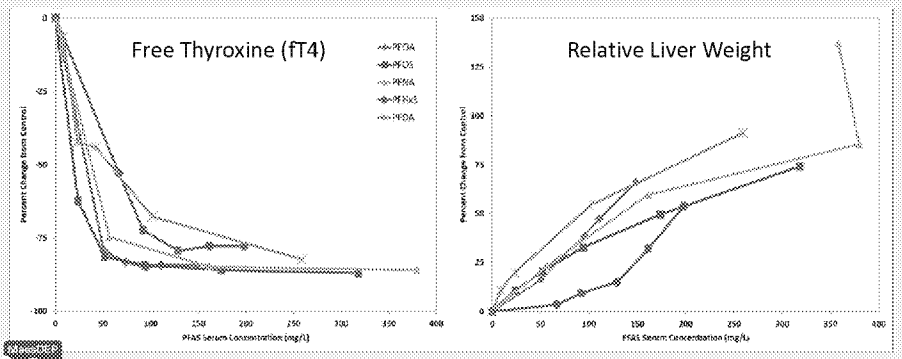
- Male and female Sprague-Dawley rats
  - Five treatment levels and control
  - Gavage daily
  - Individual animal level data
  - Serum PFAS levels
  - Multiple organ systems evaluated
- Data tables released in 2018
- Limitations
  - Serum PFAS, don't know time of last dose relative to time of sacrifice and collection of serum, assume serum at time of death is representative of internal exposure dose
  - Potential for interference by PFAS in methods used to measure thyroid hormone
  - PFBS and PFHxA given twice a day

Methods for RPF Analysis

- Identified sensitive endpoints with dose-response trend
  - Thyroid hormone – fT4
  - Liver weight
- Used individual animal data
- Applied several dose metrics –
  - Applied dose (mg/kg-day)
  - PFAS serum concentration (mg/L)
  - Human Equivalent Dose (HED) (mg/kg-day)
- Conducted benchmark dose modeling
  - USEPA BMDS
  - Bayesian Benchmark Dose (BBMD)
- Calculated RPF using BMD estimates

Results

- Male rats equal or higher internal PFAS concentration and more sensitive to effects than female
- Thyroid hormone steep DR > 50% decrease for 4 of 5 at lowest dose tested



Benchmark Dose Estimates

- Benchmark Response
  - Free Thyroxine concentration 20% change from control
  - Relative Liver weight 5% change from control
- EPA BMDS – multiple DR models "fit" fT4 data visually but very different BMDs
- Bayesian Benchmark Dose (BBMD) - model average

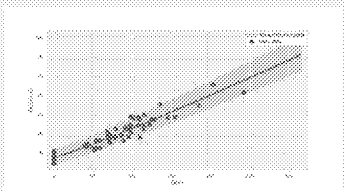
Bayesian Benchmark Dose BBMD (Shao and Shapiro 2018)
https://benchmarkdose.org/

Bayesian Benchmark Dose (BBMD)

Example- PFOA relative liver weight

Linear model

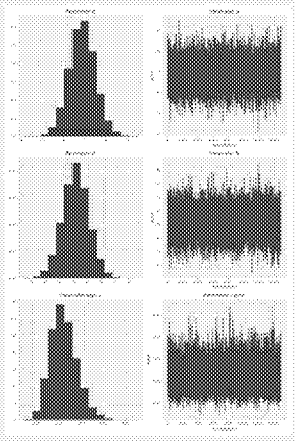
$f(dose) = a + b \times dose$



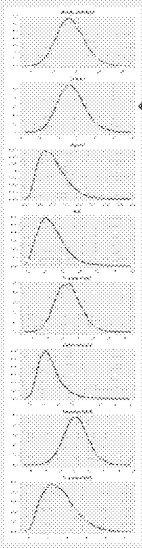
Posterior predictive p-value for model fit: 0.526

Model weight: 64.2%

Estimate of each parameter



Estimated BMD for each of 7 models



Shao and Shapiro 2018

https://benchmarkdose.org/

Central tendency: Relative 5%
BMR: None
Adversity value: 0.050

Example- PFOA relative liver weight

Linear model summary table 5% change from control

Statistic	Trimmed Average	Linear	Power	Hill	Exponential2	Exponential3	Exponential4	Exponential5
Prior model weight	N/A	0.143	0.143	0.143	0.143	0.143	0.143	0.143
Posterior model weight	N/A	0.642	0.122	0.029	0.085	0.006	0.088	0.029
BMD (median)	12.719	11.684	14.670	16.271	15.365	16.569	11.056	17.557
BMDL (5th percentile)	11.815	10.570	11.741	11.677	14.146	14.772	9.686	12.220
25th percentile	12.337	11.210	13.186	14.109	14.826	15.724	10.503	14.904
Mean (SD)	12.748 (0.600)	11.728 (0.752)	15.050 (2.498)	16.761 (3.683)	15.400 (0.811)	16.858 (1.646)	11.073 (0.871)	18.095 (4.237)
75th percentile	13.137	12.191	16.505	18.888	15.921	17.651	11.620	20.633
95th percentile	13.781	13.036	19.730	23.519	16.808	19.966	12.523	25.928

Benchmark Dose Estimates

NTP (2018) 28-day male rat bioassay data

End Point	Free T4	Relative Liver Wt	Free T4	Relative Liver Wt
Exposure Metric	Serum (mg/L)		HED (mg/kg-day)	
BMR	20%	5%	20%	5%
PFOA	18	13	0.0018	0.0013
PFOS	6.7	13	0.0005	0.0009
PFNA	5.6	13	0.0009	0.0021
PFHxS	36	82	0.0023	0.0053
PFDA	13	7	0.0012	0.0006

- Dose metric- internal dose PFAS serum concentration
- Adjust to human equivalent dose (HED) estimated using USEPA (2016) clearance equation and ATSDR (2018) volume of distribution and half-life values
- Model Average of 7 D-R models

Calculation of Relative Potency

$$RPF_i = \frac{\text{Index Chemical}}{\text{Chemical}_i}$$

$$RPF_{fT4} = \frac{PFOA}{PFOS} = \frac{18}{6.7} = 3 \qquad RPF_{liver} = \frac{PFOA}{PFOS} = \frac{13}{13} = 1$$

RPF = 1 Same potency

RPF > 1 Chemical more potent than Index chemical

RPF < 1 Chemical less potent than Index chemical

How big does the RPF need to be to be considered different?

Dioxin-like PCBs – 1/2 an order of magnitude (3)

- Special case – common well-known mechanism of action, applies across all effects and exposures

PAH - one order of magnitude (10)

- Structurally related congeners, sensitive effect with similar toxicity and mechanistic rationale

PFAS - ??

- Structurally related, similar toxicity across several endpoints, mechanism(s) unknown

Potency Relative to PFOA

NTP (2018) 28-day male rat bioassay data

End Point	Free T4	Relative Liver Wt	Free T4	Relative Liver Wt
Exposure Metric	Serum (mg/L)		HED (mg/kg-day)[a]	
BMR	20%	5%	20%	5%
PFOA	1	1	1	1
PFOS	3	1	4	1
PFNA	3	0.9	2	0.6
PFHxS	0.5	0.2	0.8	0.2
PFDA	1	2	2	2

- All RPF within factor of five (5)
- Most within factor of two (2)

Limitations of RPF Exploration

- Low dose portion of D-R curve poorly characterized for thyroid hormone response
- Potential for interference by PFAS in methods used to measure thyroid hormone
- Uncertainty in serum concentration to represent consistent measure of exposure

Conclusions: RPF Exploration

- All five of the longer-chain subgroup of PFAS - PFOA, PFOS, PFNA, PFHxS and PFDA - caused dose-dependent effects in the liver and thyroid.
- Serum concentrations associated with sensitive responses in animals are generally within 1-2-fold of PFOA, all within 5-fold.
- Exposure expressed as HED yielded similar relationship as serum to PFOA.
- NTP 2018 data support similarity of potencies among these 5 PFAS in rats.

Acknowledgements

Massachusetts Department of Environmental Protection

- Office of Research and Standards

Tsedash Zewdie

Mark Smith

- Drinking Water Program

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Questions and Discussion

Q. James Jacobus: Is there a step for evaluating visual fit in Bayesian benchmark dose modeling (BBMD) when doing model averaging? How is the weighting for each model calculated?

A. Sandra Baird: In the table on slide 16, model weights are shown. As shown on slide 15, there is a posterior predictive p-value for model fit. This is the method that is used for calculating the model weight. I am not a biostatistician but I had asked Kan Shao to check to make sure that the conclusions were accurate. We can talk offline and I can give you more information about this.

C. James Jacobus: Thank you! We are looking at how best to incorporate model averaging in benchmark dose software (BMDS) now that it is offered.

Q. Gloria Post: Did EPA or the Agency for Toxic Substances and Disease Registry (ATSDR) provide volumes of distribution for all 5 PFAS?

A. Sandra Baird: We used the volumes of distributions and the half-lives that were in the draft ATSDR document for PFAS.

Q. Tom Simones: How did you decide on benchmark responses (BMRs) of 5 percent for liver weight and 20 percent for thyroid hormone–fT4? Are the relative potency factors sensitive to choice of BMR?

A. Sandra Baird: For relative liver weight, the 5 percent was used in some other relative potency evaluations and we also looked at some other literature on evaluating the liver effects. The results were essentially the same when we used 10 percent and I think that might also be a reasonable choice. The 20 percent was really based on the thyroid hormone. This was based on a concern that a change of less than 20 percent that could be biologically important. From the data you saw, 50 percent is really the place where the lowest doses all show a change. For the 20 percent, you can sort of calculate it (i.e., the BMDs at the 20% response rate are low confidence given the limited data available for estimating the dose-response curve for low response rates). The thyroid data are very challenging and I don't feel confident in those results. The relative potency factors were not really sensitive to the choice of BMR in this case.

Q. Gloria Post: What data was used as the basis for assuming the potency of perfluoroheptanoic acid (PFHpA) is similar to the other 5 PFAS?

A. Sandra Baird: We assumed the potency of PFHpA was similar to the other 5 PFAS based on its structural similarity and the fact that it was present in drinking water. We needed to develop regulations to protect people from the additional PFAS that were showing up in their water. This is something that we will be looking at in the future as more information becomes available.

C. Sandra Baird: Tsedash Zewdie is retiring as of today.

C. Gloria Post: Please tell Tsedash that I send my best wishes.

C. Mary Butow: Please give my regards to Tsedash as well .I worked with her on the MA-TURA (Massachusetts Toxics Use Reduction Act) Science Advisory Board for years.

C. Sandra Baird: Thank you, I will let Tsedash know.

Thoughts/Suggestions on a Possible Face-to-Face Meeting

C. Ruth Etzel: During an earlier webinar, Betsy Behl mentioned that it might be possible for EPA to host a face-to-face meeting in the near-term. Our last face-to-face meeting was held in 2012.

The reason that we are soliciting your thoughts and suggestions on a face-to-face meeting is because FSTRAC has now reached the age of 35. Ed Ohanian (who is also on this call) was one of the leaders who birthed FSTRAC back in 1985 and others on this call may have been there as well. We think that now is a good time to reflect on what FSTRAC has accomplished and to spend some time together charting out our future course. One way to do this kind of strategic brainstorming would be to bring us all to one spot where we could spend a few hours strategizing about the future of FSTRAC. What do we want FSTRAC to do more or less of? Are there areas where FSTRAC is overlapping with other groups?

There are a couple of possible scenarios. A first scenario would be that FSTRAC does its strategic planning entirely virtually during 2021. A second scenario is that FSTRAC holds off on strategic planning until 2022 when we might have the funding and we might be able to actually fly, take trains, and interact personally with one another, and we could plan a person-to-person meeting. There are probably some other options and we'd like to hear those as well

There seems to be an overwhelming consensus that we begin FSTRAC strategic planning online in 2021. If you have thoughts about things that you'd like to see FSTRAC doing that we are not currently doing, or things that we are currently doing that you think we can stop doing, this would be the time to send suggestions and thoughts to Shamima. All of this can be folded into the strategic planning effort.

C. Shamima Akhter: We will compile all the information and get back to the FSTRAC members if we have more questions.

Thank you all for joining us today. We will post the meeting summary to the SharePoint site and we will provide the link and log in information to access the SharePoint site. If you have any questions, please feel free to email me anytime. Thanks again and goodbye.

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Appendix A.

FSTRAC Webinar Registration List

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Appendix B.

FSTRAC Webinar Speaker Bios

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1. **HECD Updates – Betsy Behl, Director of the Health and Ecological Criteria Division, OW/EPA**
   Ms. Elizabeth (Betsy) Behl is the Director of the Health and Ecological Criteria Division (HECD) in the Office of Science and Technology in the Office of Water at EPA. HECD is responsible for the national Water Quality Criteria program and regulation of contaminants in biosolids under the Clean Water Act (CWA), and science support for national primary drinking water regulations under the Safe Drinking Water Act (SDWA). CWA support includes development of national Ambient Water Quality Criteria (304(a)) to protect aquatic life and human health (including source drinking water, fish consumption, and recreational uses) from nutrients, toxic substances and microbial contaminants. SDWA support includes development of non-regulatory Health Advisories and Benchmarks containing health effects information on protective levels of pollutants in drinking water. HECD provides OGWDW with support for regulatory activities under SDWA including the six-year review of regulated contaminants, regulatory determinations, the unregulated contaminated monitoring rule, and the Candidate Contaminant List. In addition, HECD supports state development of bio-criteria programs, and regional support for biological evaluations of endangered species.

2. **Determination of Data-Derived Exposure Values and Uncertainty Factors for the Derivation of Health Protective Drinking Water Guideline for Manganese. Mathieu Valcke, Institut National de Santé Publique du Québec (INSPQ)**
   Dr. Mathieu Valcke is an expert scientific advisor in toxicological risk assessment and institutional researcher at Institut national de santé publique du Québec, where he's been working for 17 years. He's also a clinical assistant professor at the department of environmental and occupational health from the University of Montreal's School of Public Health. With an academic background in biochemistry and environmental sciences, he holds a PhD in Public health with specialty in toxicology from the University of Montreal. He regularly collaborates with WHO and PAHO on various projects of Public health issues related to chemical exposures, including with WHO's chemical risk assessment network that supports the Strategic Approach to International Chemicals Management. His research interests focus on improving toxicological health risk assessment methods by stochastic modelling approaches to chemical exposure and the use of human biomonitoring data. He has won several publication and presentation awards from the Society of Toxicology's Risk Assessment Specialty Section.

3. **EPA's Draft Harmful Algal Bloom (HAB) and Hypoxia Events of National Significance (HHENS) Policy – Lesley D'Anglada, OW/EPA**
   Dr. Lesley D'Anglada is a Senior Microbiologist with the Office of Science and Technology, Office of Water. For the past eleven years, Lesley has been working on cyanotoxins and Harmful Algal Blooms issues such as creating and managing the EPA CyanoHABs Website and Freshwater HABs Newsletter, leading the development of the Drinking Water Health Advisories for Cyanotoxins, and more recently, the draft EPA HABs and Hypoxia Events of National Significance Policy. Lesley has also represented EPA for many years in national and international workgroups and committees such as the World Health Organization's Water Quality and Health Technical Advisory Group, the National HABs Committee, and the Interagency Working Group for HABHRCA (Harmful Algal Blooms, Hypoxia, Research and Control Act). She received her Doctorate in Public Health, Masters on Environmental Health and Bachelor Degree in Industrial Microbiology from the University of Puerto Rico.

4. **Comparative Potency Evaluation for PFAS Drinking Water Values. Sandra Baird, Massachusetts Department of Environmental Protection (MassDEP)**
   Dr. Sandra Baird is an environmental analyst in the Office of Research and Standards at the Massachusetts Department of Environmental Protection. She supports the air toxics and drinking water programs through the development of toxicity values and guidance. Her research interests include characterization of uncertainty in toxicity values, and risk assessment for mixtures. She was a member of the National Academies Committee on Formaldehyde. Dr. Baird received her B.S. in toxicology from Northeastern University, Ph.D. in toxicology from the University of Rochester, School of Medicine and Dentistry, and her postdoctoral training as a Fellow in the Interdisciplinary Program in Health at the Harvard School of Public Health.

Message

From: Strong, Jamie [Strong.Jamie@epa.gov]
Sent: 2/7/2018 3:38:07 PM
To: Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]
CC: Donohue, Joyce [Donohue.Joyce@epa.gov]
Subject: GenX assessment

Just getting a few things down to talk about tomorrow:

1. WA for peer review. I will look at this today. We need to meet/talk to folks in ORD working on PFBS and share the revised version with them after I take a look.
2. Talk to ORD PFBS team, they are doing a systematic review of new lit for PFBS. We will need to model our write up of study evaluation after theirs. Obviously GenX is a different animal given we have the data we have.
3. Need to start drafting Prob Formulation for GenX. Betsy expects this in about 3 weeks time. She told Peter we could deliver that by then. I started with the PFOA HA. A lot of that text we can keep, modify or add to. I sent that to Brittany. Lets discuss who is doing what and what to include. Maybe OPPT assessment has some of the p chem, uses, etc. If not we need to figure out where to get those pieces too.
4. Need to get the OPPT assessment. Data is up on NC site. Please download all of it.
5. DB UF write up...need this for OPPT.
6. Set up weekly meetings. Greg and Britt will be lead on this with Joyce and Jamie as support/consultation. As of now working under assumption we need full draft by April. Final by July. The last workplan I sent is what I have, not sure whether the Coord Committee blessed it or received any comments from the group. I also haven't heard anything as to whether the Admin office approved strategy.
7. I can download on the Fed Agency Info exchange I went to Monday and Tuesday too.

That's all!

Jamie

Message

From: DAnglada, Lesley [DAnglada.Lesley@epa.gov]
Sent: 3/18/2021 1:07:51 PM
To: Miller, Gregory [Miller.Gregory@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]
Subject: FW: IRAC Policy Council --Update on information sharing on PFAS

FYI – Update on dates for IRAC's Meeting on PFAS

From: Dennis, Sherri <Sherri.Dennis@fda.hhs.gov>
Sent: Tuesday, March 02, 2021 1:42 PM
To: McGarry, Sherri (CDC) <nmc6@cdc.gov>; Hearl, Frank J (CDC) <fjh1@cdc.gov>; Miller, David <Miller.DavidJ@epa.gov>; DAnglada, Lesley <DAnglada.Lesley@epa.gov>; Hooberman, Barry <Barry.Hooberman@fda.hhs.gov>; Foley, Steven <Steven.Foley@fda.hhs.gov>; Jon Bell (Jon.Bell@noaa.gov) <Jon.Bell@noaa.gov>; Reddy, Shanker - AMS <shanker.reddy@usda.gov>; Lindsay, James <james.lindsay@usda.gov>; Hoffmann, Sandra - ERS <sandra.hoffmann@usda.gov>; Abbott, Linda - OCE, Washington, DC <linda.abbott@usda.gov>; 'Chilcoat, Clayton D COL USARMY MEDCOM APHC (US)' <clayton.d.chilcoat.mil@mail.mil>; theresa.varner@usda.gov; Yang, Hong (CBER) <Hong.Yang@fda.hhs.gov>; melanie.abley@usda.gov; Bowman, John (jobowman@usaid.gov) <jobowman@usaid.gov>; Doug.Farmer@nass.usda.gov; Ahmed Kablan <akablan@usaid.gov>; melanie.abley@usda.gov
Cc: Middleton, Karlyn <Karlyn.Middleton@fda.hhs.gov>; Hooberman, Barry <Barry.Hooberman@fda.hhs.gov>; Zablotsky-Kufel, Joanna - FSIS <joanna.zablotsky-kufel@usda.gov>
Subject: IRAC Policy Council --Update on information sharing on PFAS

Dear IRAC Policy Council,
Below is an update on the planning for the information exchange/sharing on PFAS from the organizing committee.

A total of 17 presentations were proposed, with presenters from FDA, EPA, and USDA. The list of presentations, provided below, covers a wide range of topics including overviews of research, regulatory activities, and models.

Three sessions have been scheduled as follows:

Session #1 will be held on April 14th from 1 pm to 3:30 pm
Session #2 will be held on April 21st from 1 pm to 3:30 pm
Session #3 will be held on April 26th from 1 pm to 3:30 pm

We will send an outlook invitation for each of the 3 sessions along with the agenda and audio/visual information.

If you have any questions or concerns, don't hesitate to reach out to any of the members of the organizing committee - Karlyn Middleton, Barry Hooberman, and Sherri Dennis
Thank you !

Agency	Presenter	Presentation Title	
Session 1 (April 14, 2021 1 pm to 3:30 pm)			
FDA	David Goldman Paul South	General introduction and overview of PFOS	
EPA	Susan Burden	A Science-Based Approach to Understanding and Managing Environmental Risk from PFAS	
USDA	Randy Duverna	PFAS Analytical Approaches, Surveillance Testing, and Incident Response at USDA	
EPA	Susan Burden	Overview talk of ORD's PFAS research	
USDA	Sara Lupton	ARS Research on PFAs Fate and Disposition in Cattle	
FDA	Lowri DeJager	Overview of FDA's work with States on PFAS analyses	

Session 2 (April 21, 2021 1 pm to 3:30 pm)			
FDA	Susan Genualdi	Methods for the analysis of PFAS in foods	
EPA	Hannah Holsinger	EPA's Regulatory Determination and Drinking Water Rule Development Process	
FDA	Barry Hooberman	Approaches to determining interim screening levels for PFAS in animal feed	
EPA	Dustin Kapraun Paul Schlosser	Model template approach for rapid evaluation of physiologically based pharmacokinetic models for use in human health risk assessments (note that this approach was applied to PFAS risk assessments))	
FDA	Ian Edhlund	PBPK models for PFAS to support the determination of interim screening levels in animal feed	
EPA	Elaine Cohen-Hubal	Human exposure pathways to poly- and perfluoroalkyl substances (PFAS) from indoor media: A systematic review protocol	
Session 3 (April 26th 1 pm to 3:30 pm)			
EPA	Cavin Ward-Caviness	Using electronic health records in North Carolina to examine the impacts of PFAS on clinical outcomes	
EPA	Justin Conley	Dose additive developmental toxicity of a mixture of three PFAS (HFPO-DA, NBP2, PFOS) in the Sprague-Dawley rat	
EPA	Justin Conley	Characterization of developmental toxicity and Adverse Outcome Pathways (AOPs) for emerging PFAS – individual compounds and mixtures	
FDA	Shruti Kabadi	Characterizing biopersistence potential of the metabolite 5:3 fluorotelomer carboxylic acid upon repeated oral exposure to the parent compound 6:2 fluorotelomer alcohol	
FDA	Penelope Rice	Comparative analysis of the potential human health effects of 6:2 fluorotelomer alcohol (6:2 FTOH) versus perfluorohexanoic acid (PFHxA)	

Summary

Federal-State Toxicology and Risk Analysis Committee (FSTRAC) Webinar

April 21, 2021

"Safe and Clean Water"

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Wednesday, April 21, 2021

Welcome and Introduction.....**Shamima Akhter**, OW/EPA

HECD Priorities in FY 2021.....**Betsy Behl**, OW/EPA

Incorporating New Approach Methodologies in
Risk Assessments ..... **Maureen Gwinn**, ORD/EPA

Unregulated Contaminant Monitoring
Rule (UCMR 4 & 5) Update .....**Rebecca Flynn**, OW/EPA

Potential of Manganese-induced Neurologic Harm to
Formula Fed Infants ..... **Deanna Scher**, **Kristine Kloss**, and **Helen Goeden**,
Minnesota Department of Health

Overview of the Manganese Health Risk Assessment;
Drinking Water Standards for Manganese .....**Brandon Kernen** and **Jonathan Ali**,
New Hampshire Department of Environmental Services

Class-Based Assessments for Drinking Water Contaminants with
Limited Toxicity Information .....**Bradley Lampe**, NSF

Chemical Safety for Sustainability Research Program (CSS) ..... **Heidi Bethel**, ORD/EPA

Appendix A. FSTRAC Webinar Registration List

Appendix B. FSTRAC Webinar Speaker Bios

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Welcome and Introduction

Dr. Shamima Akhter from the Office of Science and Technology's Health and Ecological Criteria Division (OST/HECD) in the U.S. Environmental Protection Agency (EPA). Office of Water (OW) welcomed everyone to the Spring 2021 Federal-State Toxicology and Risk Analysis Committee (FSTRAC) webinar.

The mission of FSTRAC is to strengthen relationships and cooperation among EPA, states and tribes through the exchange of technical information primarily regarding water-related human health and risk assessment and also share information on ecological effects related to water quality criteria. The goal of FSTRAC is to share information that supports the development of well-rounded, integrated approaches to effects assessment, risk assessment, risk management, risk communication, and standard-setting for drinking water, groundwater, and surface water contaminants. Additional information about FSTRAC is available on EPA's FSTRAC website (https://www.epa.gov/wqc/federal-state-toxicology-risk-analysis-committee-fstrac).

Dr. Akhter announced that approximately 115 FSTRAC members had registered for the webinar. Currently, there are 270 FSTRAC members; 19 new members have joined FSTRAC since the last webinar held in September 2020. She noted that for today's webinar, there would be seven presentations. Dr. Akhter mentioned that she and Ms. Katie Fallace (the current state co-chair of FSTRAC) would moderate the webinar.

Dr. Akhter introduced the first speaker, Ms. Betsy Behl, the Director of Health and Ecological Criteria Division (HECD) in EPA OST. Ms. Behl gave a presentation titled "HECD Priorities in FY 2021."

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HECD Priorities in FY 2021

Elizabeth (Betsy) Behl
U.S. Environmental Protection Agency, Office of Water
Office of Science and Technology, Health and Ecological Criteria Division
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Visuals follow. Please contact the speaker for more information.

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HECD PRIORITIES IN FY 2021

Elizabeth (Betsy) Behl
Director, Health and Ecological Criteria Division, OST/OW/EPA

FSTRAC Meeting
April 21, 2021

PRIORITIES OF THE NEW ADMINISTRATION

- ENVIRONMENTAL JUSTICE AND EQUITY
- CLIMATE CHANGE
- RESTORE THE ROLE OF SCIENCE AND SCIENTISTS

CELEBRATING ACCOMPLISHMENTS

Posted since late January 2021

- Biocriteria brochure
- Biosolids
  - Website updated
  - Biennial review #8 (2018-2019)
- Harmful Algal Blooms
  - Workgroup summary
  - Newsletter posted
- FSTRAC newsletter

Coming soon

- NSTEPS website updated
- User perception survey report

FY2021 PRIORITIES FOR BIOCRITERIA AND CONVENTIONAL POLLUTANTS

Biocriteria

- Critical elements reviews in SC and NM
- BCG development:
  - Caribbean Coral Reef
  - Massachusetts Bays
  - Central Great Plains (MN, IA, KS, MO, NE, OK)
  - Pacific NW Maritime Region (OR, WA): factors in climate change
- Communications: 2 flyers released, webinar series initiated, website updated

FY2021 PRIORITIES FOR BIOCRITERIA AND CONVENTIONAL POLLUTANTS

Nutrient Criteria

- Publish final lake criteria and work with states on their specific efforts using the new approach
- Continue pilots and groundwork to develop tools for rivers/streams and estuarine criteria
- Technical support for criteria development in MA, NH, ME, AL, GA, KY, TN, NC, FL, Grand Portage, AR, OK, NM pueblos, ND, CO, WY, Coeur d'Alene, ID, CTCLUSI
- Communications: launch N-Steps Online, continue webinar series

FY2021 PRIORITIES FOR AQUATIC LIFE CRITERIA FOR TOXICS

- Complete external peer review of PFOA and PFOS draft aquatic life criteria and revise draft documents
- Initiate work on aquatic-dependent wildlife criteria for PFOA and PFOS, beginning with data quality review of toxicity studies.
- Initiate draft case study pilots for several PFAS chemicals using NAMS to inform the update the 1985 Guidelines
- Develop initial internal rough draft of ion criteria document

FY2021 PRIORITIES FOR AQUATIC LIFE CRITERIA FOR TOXICS

- Complete external peer review CRADA Phase I Report
- Initiate problem formulation, conceptual model and QA of toxicity studies for Nickel, Zinc, Lead, Cobalt criteria
- Complete draft of GIS map for national water chemistry data and example criteria for Al and Cu
- Complete Biological Evaluation draft effects document for CA Statewide ESA BE
- Hold 2 Toxics Outreach Webinars with EPA Regions and associated states
- Continue to provide both state criteria and ESA support to regions/states

FY2021 PRIORITIES FOR HUMAN HEALTH

- Six Year Review of Drinking Water Standards
  - Working to provide updated screening MCLG values for cancer and noncancer-driven chemicals.
- PFOS/PFAS NPDWS Scientific and Regulatory Support
  - Draft MCLGs for PFOA/S ready for Fall 2021 SAB review.
  - Developing PFOA/PFOS toxicological models in partnership with ORD.
- Human Health Benchmarks for Pesticides (HHBP)
  - Completed update, undergoing QC review; Management review aimed to begin in May, publish by end of May.
- GenX Chemicals Tox Assessment
  - Developing an oral RfD.

FY2021 PRIORITIES FOR HUMAN HEALTH

- 2022 Five-Year Review of the 2012 Recreational Water Quality Criteria
  - Draft in development, awaiting submissions of project summaries from technical leads.
- Recreational Criteria for Coliphage
  - Draft coliphage recreational criteria under development
- HABs and Hypoxia Events of National Significance (HHENS) policy
  - Under review by OW IO
  - next OMB review
- Health Effects Support Documents(HESD) for saxitoxins and Nodularins
  - Drafts under development

FY2021 PRIORITIES FOR BIOSOLIDS

- Biosolids Risk Assessment Approach Review
- National Biosolids Meeting 2021 Planning
- Biosolids Webinar Series
- EPA CompTox Dashboard Biosolids List Update/Paper Published
- Biennial Reviews:
  - publish 2018-2019 review
  - initiate 2020-2021 review
- Complete Pathogens/Vectors Technical Guidance Update
- Publish TNSSS and Elemental Analysis Documents

QUESTIONS?

CONTACT:
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202-566-0788

Questions

Q. Gloria Post: Is there any estimated timeframe for the hexafluoropropylene oxide (HFPO) dimer acid and its ammonium salt (GenX chemicals) toxicity assessment draft to be posted publicly?

A. Betsy Behl: I do not have an estimated timeframe yet but I am hoping to get the GenX toxicity assessment through a peer review in the next few months. We might be able to post it publicly by the end of this year.

Q. Sophie Greene: Are there any plans to develop 304(a) human health criteria for perfluorooctane sulfonate (PFOS)? Thanks!

A. Betsy Behl: Our first focus is updating the toxicity assessment we did in 2016 for PFOA and PFOS. That activity is ongoing. Once we have those values, we will then need to establish bioaccumulation factors (BAFs). We will then be able to move forward with criteria. We will likely be able to begin working on 304(a) human health criteria next year.

Q. Holly Davies: Are there any plans for organic chemicals in biosolids?

A. Betsy Behl: Currently, we are establishing basic processes for screening risk for contaminants in biosolids. After the Science Advisory Board (SAB) review is completed (which hopefully will be before the end of this calendar year or the beginning of the next), we will be able to tell you more about what chemicals we will be working on first.

Q. Amy Risen: For PFAS, are there plans for developing Maximum Contaminant Levels (MCLs) in addition to Maximum Contaminant Level Goals (MCLGs)?

A. Betsy Behl: Yes, there is a plan for developing MCLs. We made the preliminary regulatory determination back in January and February 2021. In the EPA Health and Ecological Criteria Division (HECD), we are working on the MCLG component. There is a parallel effort going on in the EPA Office of Ground Water and Drinking Water (OGWDW) to develop the MCLs. The overall goal of this effort is to develop MCLs and not just MCLGs.

Q. Elaine Khan: Can you elaborate a bit on the toxicological models for PFOA and PFOS?

A. Betsy Behl: I do not have the specifics on the toxicity models at this time. Currently, we are looking at all of the available toxicity data that have come out since (or right before) the Health Advisory was published, from 2016 to present. We have worked with the EPA Office of Research and Development (ORD) to do a systematic review of the literature and that has been really helpful. We are going through all of the animal data and epidemiological data that have been generated since 2016 and people are working very hard to evaluate all the studies that have been identified.

Q. Gloria Post: Are you reconsidering your consideration of toxicology data that was available when the Health Advisories were available, for example, whether the toxicology data on immune effects that was not considered at the time is relevant.

A. Betsy Behl: At the time, we did not say that the toxicology data on immune effects were not relevant. However, we did say that there were not enough toxicology data on immune effects to draw quantitative conclusions. A lot of PFOA and PFOS toxicology studies have been published since that time, particularly on immunotoxicity, and we will definitely be considering that endpoint in addition to other endpoints.

Q. Andrea Candara: Are fact sheets or other outreach materials being developed on benthic harmful algal blooms (HABs) and if so, when might those materials be released?

A. Betsy Behl and Lesley D'Anglada: We have not developed fact sheets or outreach materials on benthic HABs. However, we host in the EPA CyanoHABs website the Benthic HABs Discussion Group where we post agendas, presentations and recordings of the workgroup calls. See here:
https://www.epa.gov/cyanohabs/epa-newsletter-and-collaboration-and-outreach-habs

There is also the Interstate Technology & Regulatory Council (ITRC) Benthic Harmful Cyanobacterial Blooms (HCB) Workgroup which is planning to develop a guidance document on how to prevent and manage benthic HABs. You can follow up with the team here:
https://www.itrcweb.org/Team/Public?teamID=82

Incorporating New Approach Methodologies in Risk Assessments

Maureen Gwinn, PhD
U.S. Environmental Protection Agency, Office of Research and Development
919-541-3794
gwinn.maureen@epa.gov

Visuals follow. Please contact the speaker for more information.

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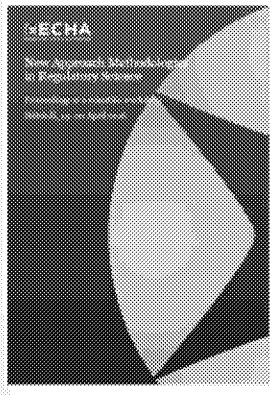
Incorporating New Approach Methodologies in Risk Assessments

Federal State Toxicology Risk Assessment Committee (FSTRAC)
April 21, 2021

Dr. Maureen R. Gwinn (gwinn.maureen@epa.gov)
Center for Computational Toxicology and Exposure
Office of Research and Development
U.S. Environmental Protection Agency
Research Triangle Park, NC

The views presented are those of the author and do not necessarily reflect the views of the US EPA.

Definition(s) of New Approach Methods (NAMs)

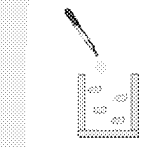


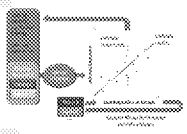
- Commonly defined to include *in silico* approaches, *in chemico* and *in vitro* assays, as well as the inclusion of information from the exposure of chemicals in the context of hazard assessment.
- Recently defined in the EPA's TSCA Alternative Toxicity Strategy as:
  - a broadly descriptive reference to any technology, methodology, approach, or combination thereof that can be used to provide information on chemical hazard and risk assessment that avoids the use of intact animals.

https://echa.europa.eu/documents/10162/22816069/scientific_ws_proceedings_en.pdf

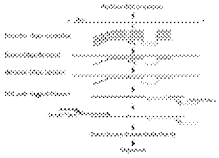
https://www.epa.gov/assessing-and-managing-chemicals-under-tsca/alternative-test-methods-and-strategies-reduce

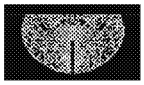
Examples of NAMs

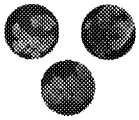




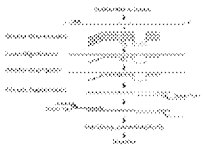
- In silico (e.g. QSAR and Read-across)
  - Estimate effects and doses
  - Consensus exposure modeling
- In vitro assays
  - Broad / screening (transcriptomics, cell painting)
  - Targeted (receptors, enzymes)
  - In vitro PODs, modes / mechanisms of action
- In vitro Toxicokinetics
  - Allow conversion of an in vitro POD to in vivo (IVIVE)
- High-throughput Exposure Measurements
  - To fill data gaps in monitoring data
- Computer models
  - Hazard models to integrate multiple in silico and in vitro data streams
  - Exposure models to increase information on different pathways of exposure

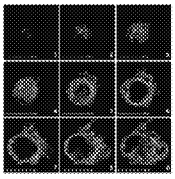


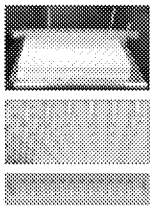


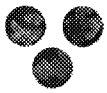


Potential Challenges with New Approach Methods







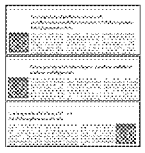


- Incomplete coverage of important pathways (i.e., biological space)
- Limited higher order biological interactions (i.e., cell-cell, tissue, and organ-level)
- Limited or lack of relevant metabolism
- Addressing uncertainties

Where can NAMs "fit" in Risk Assessment?

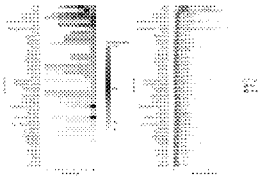
- Hazard characterization
- Dose-Response
- Exposure assessment

Provide Mechanistic Support for Hazard ID



IARC Monographs 110, 112, 113

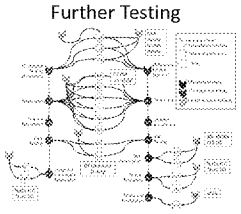
Tiered testing with High-throughput screening



Harrill et al 2021

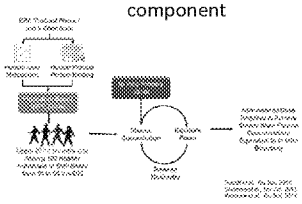
...and more!

Prioritization of Chemicals for Further Testing

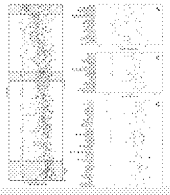


Judson et al., 2015

High-throughput toxicokinetic component

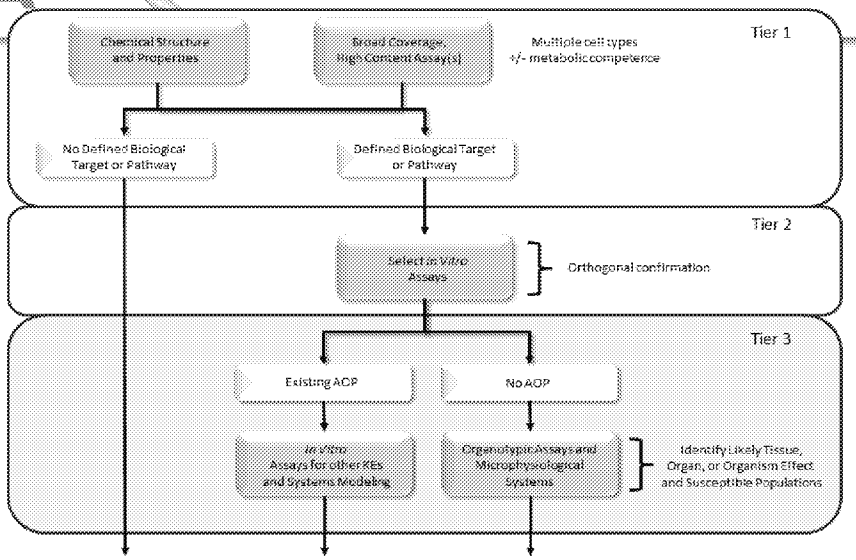


In vitro point-of-departure development from NAMs



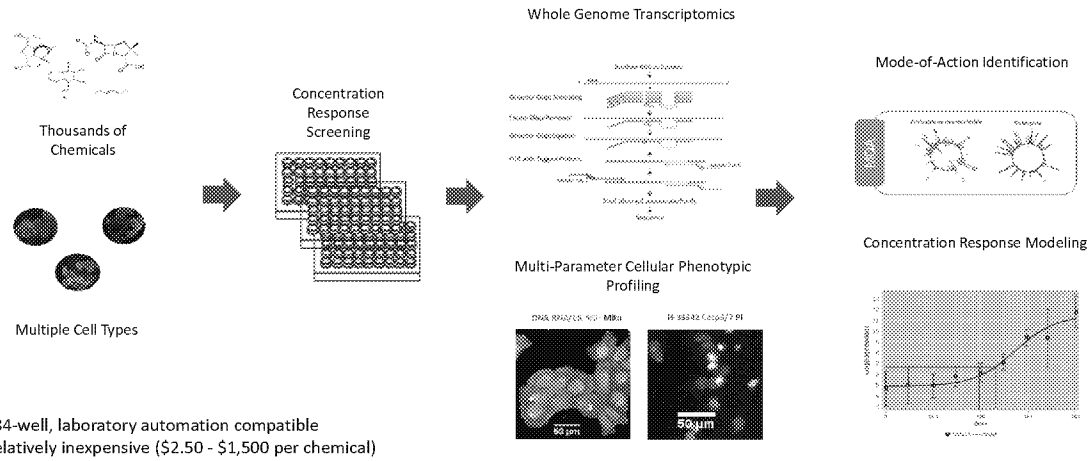
Paul Friedman et al, 2020

Tiered Hazard Evaluation Approach



The NexGen Blueprint of CompTox at USEPA
Tox. Sci. 2019; 169(2):317-322

Incorporating High-Content Technologies to Increase Biological Coverage

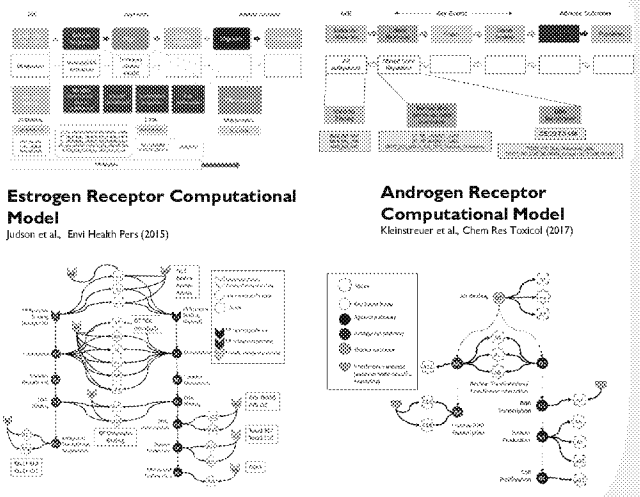


- 384-well, laboratory automation compatible
- Relatively inexpensive ($2.50 - $1,500 per chemical)
- Broad complementary coverage of molecular and phenotypic responses
- Integration of reference materials and controls for performance standards

Nyffeler et al. SLAS Discov. 2021 Feb;26(2):292-308. doi: 10.1177/2472555220950245
Harrill et al. Toxicol Sci. 2021 Feb 4;kfab009. doi: 10.1093/toxsci/kfab009. Online ahead of print

Orthogonal In Vitro Assays and Computational Modeling

- Developed multiple high-throughput screening assays
  - Use multiple assays per pathway
    - Different technologies
    - Different points in pathway
  - No assay is perfect
    - Assay Interference
    - Noise
- Use a computational model to integrate assays
  - Model creates a composite dose-response curve for each chemical to summarize results from all assays



Estrogen Receptor Computational Model
Judson et al., Envi Health Pers (2015)

Androgen Receptor Computational Model
Kleinstreuer et al., Chem Res Toxicol (2017)

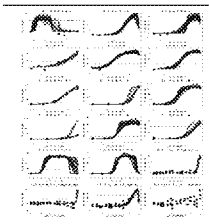
Uncertainty Analysis

Major sources of uncertainty:

1. Qualitative: is an assay "hit" really due to ER/AR activity, or assay interference?
2. Quantitative: uncertainty around the true potency value (AC50)

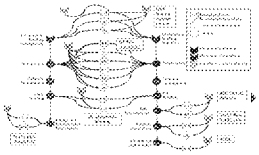
Both are now incorporated into the ER and AR model results through the development of statistical methods have been developed to establish uncertainty bounds around potency and efficacy values. These statistical methods involve resampling the data and refitting the concentration response curves thousands of times to quantitatively estimate the uncertainty.

Bootstrap Uncertainty in *In Vitro* Potency Values



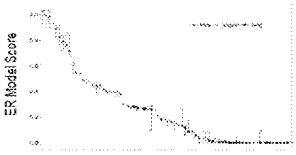
18 ER *In Vitro* Assays

Computational Modeling



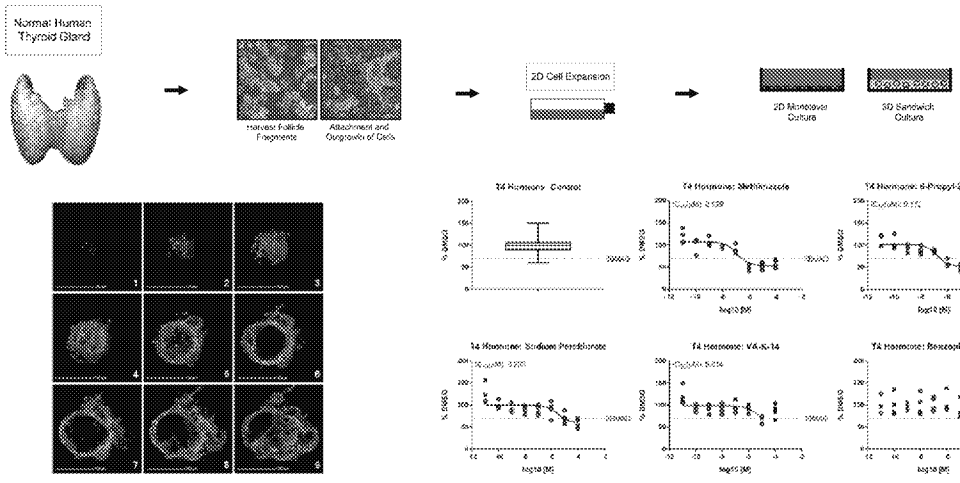
ER Pathway Model

Propagation of Uncertainty in Modeling Output



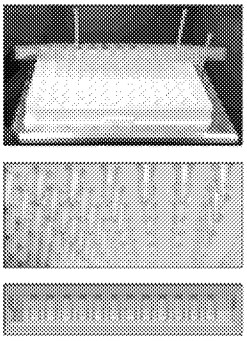
Watt and Judson, PLOS One 2018 doi.org/10.1371/journal.pone.0196962

Developing Organotypic Culture Models to Identify Tissue/Organ Effects



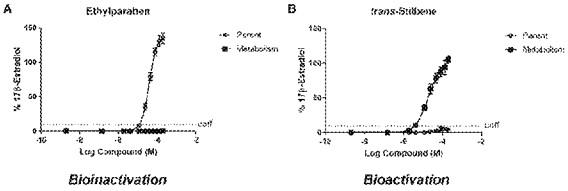
Deisenroth et al. Toxicological Sciences, Volume 174, Issue 1, March 2020, Pages 63-78, https://doi.org/10.1093/toxsci/kfz238

Metabolic Competence



Alginate Immobilization of Metabolic Enzymes (AIME)
Method: S9 fraction immobilization in alginate microspheres on 96- or 384-well peg lids

- **Retrofitting Metabolism**: AIME method suitable for biochemical- and cell-based HTS assays
- **Screening Throughput**: Adaptable to 96- and 384-well screening platforms
- **Regulatory Relevance**: Integration of phase I liver metabolism for hazard identification of parent and metabolite endocrine activity
- **Results:** Evaluation of a 63 chemical test set supports metabolic screening for -
  - Refinement of prioritization for ER-active substances based on metabolite effects
  - In some cases, supports more accurate prediction of *in vivo* effects for biotransformed substances



Bioinactivation *Bioactivation*

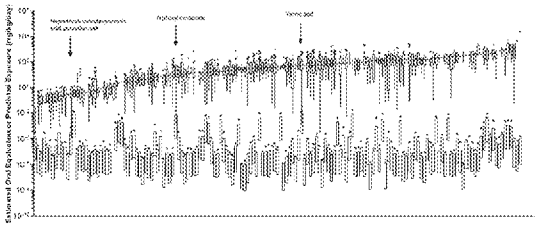
Parallel evaluation of parent compound and metabolites identifies false positive and false negative effects

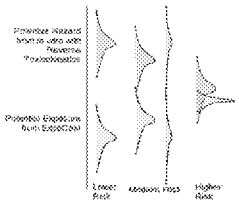
Collaboration with Unilever

Deisenroth et al. Toxicological Sciences, Volume 178, Issue 2, December 2020, Pages 281–301, https://doi.org/10.1093/toxsci/kfaa147

Linking Bioactivity and Exposure (*i.e.* Risk)

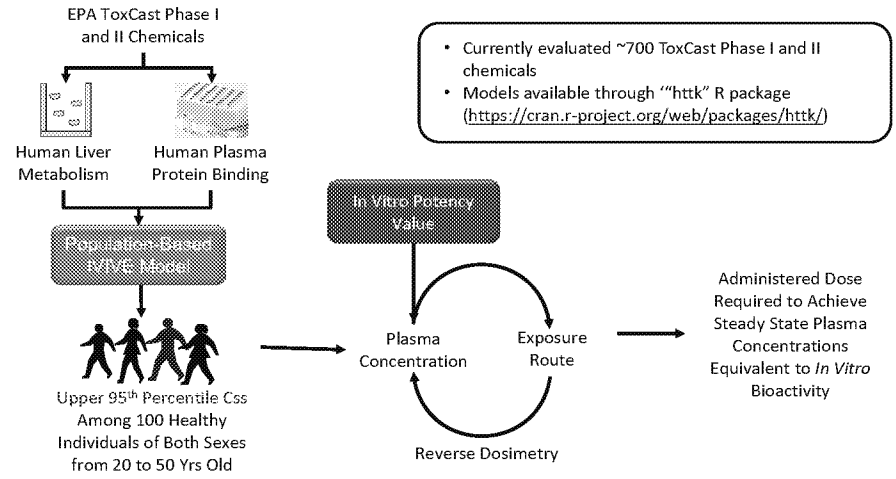
- **High throughput risk characterization** relies on three components:
  1. High throughput **hazard** (*i.e.* bioactivity) characterization
  2. High throughput **exposure** forecasts
  3. High throughput **toxicocokinetics** (*i.e.* dosimetry)





SAP Dec 2014: http://www2.epa.gov/sap/meeting-materials-december-2-4-2014-scientific-advisory-panel
Judson 2011 (https://doi.org/10.1021/tx100428e)
Wetmore 2015 (https://dx.doi.org/10.1093%2Ftoxsci%2Fkfv171)
Wambaugh 2019 (https://doi.org/10.1016/j.cotox.2019.07.001)

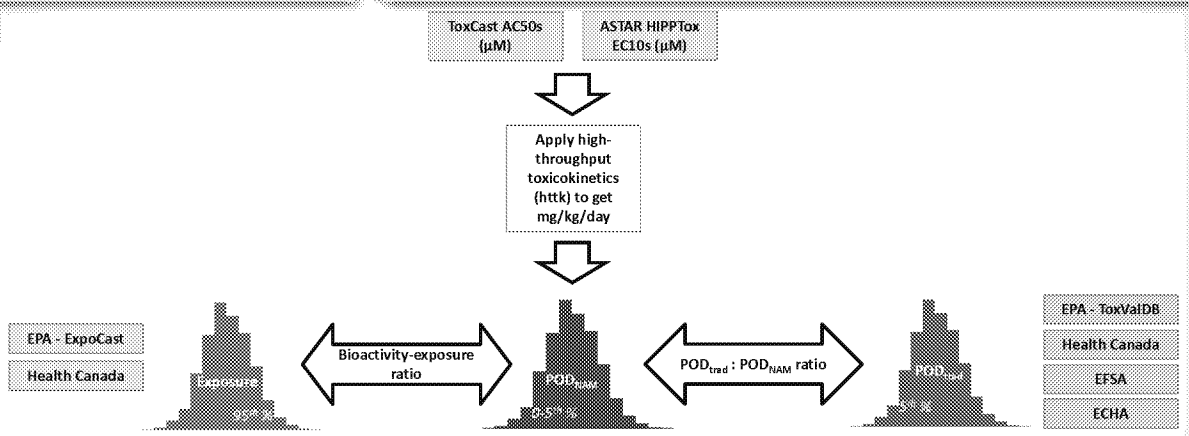
Adding the High-Throughput Toxicokinetic Component



- Currently evaluated ~700 ToxCast Phase I and II chemicals
- Models available through '"httk" R package (https://cran.r-project.org/web/packages/httk/)

Rotroff *et al.*, *Tox Sci.*, 2010
Wetmore *et al.*, *Tox Sci.*, 2012
Wetmore *et al.*, *Tox Sci.*, 2015

Development of a POD_{NAM}

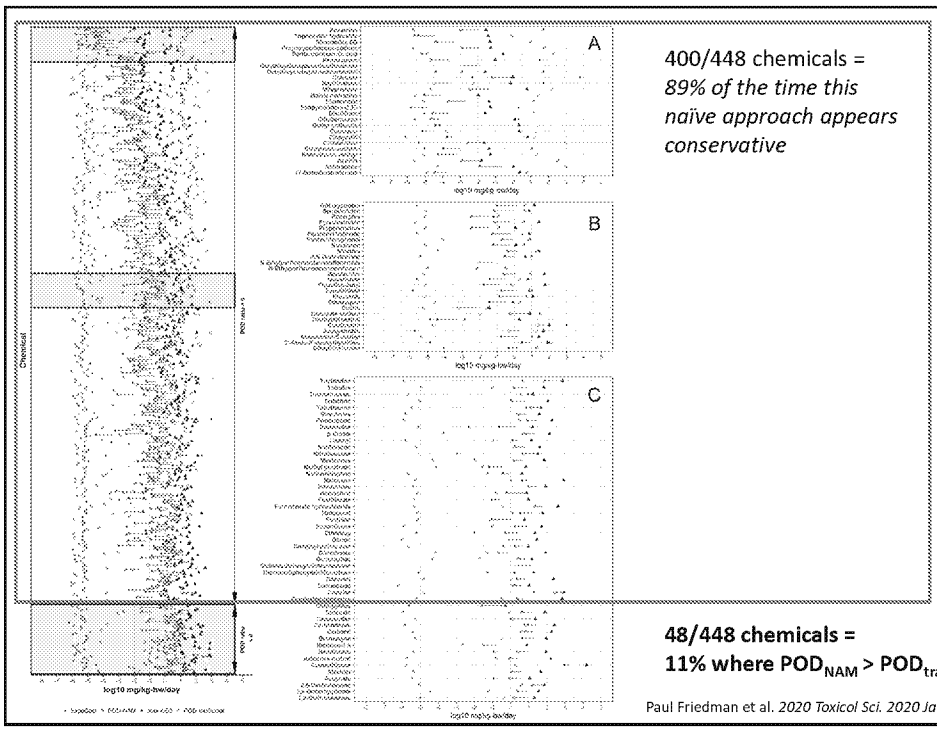


Is BER useful for prioritization?
Are there addressable weaknesses?

Is log10-POD ratio > 0 for most chemicals?
Can we learn from log10-POD ratio < 0?

- *NOEL, LOEL, NOAEL, or LOAEL*
- *Oral exposures*
- *Mg/kg/day*

Paul Friedman et al. *2020 Toxicol Sci. 2020 Jan 1;173(1):202-225. doi: 10.1093/toxsci/kfz201.*



400/448 chemicals = *89% of the time this naïve approach appears conservative*

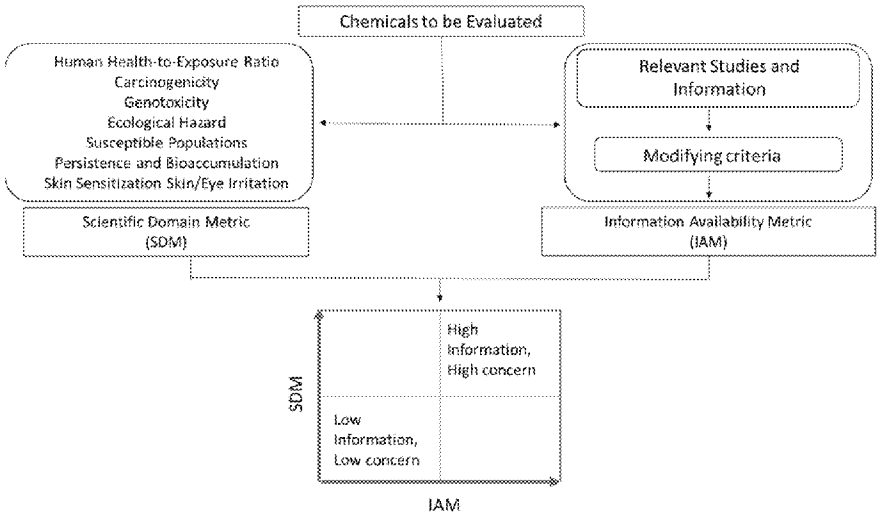
POD_{NAM} < $POD_{traditional}$

(most of the time)

48/448 chemicals = 11% where POD_{NAM} > $POD_{traditional}$

Paul Friedman et al. *2020 Toxicol Sci. 2020 Jan 1;173(1):202-225. doi: 10.1093/toxsci/kfz201.*

Public Information Curation and Synthesis (PICS) Approach



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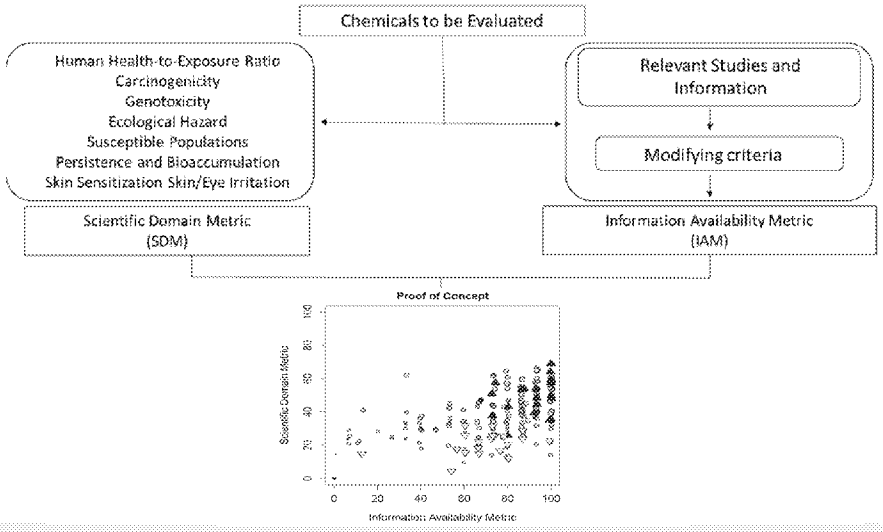

Summary

- Incorporating new technologies and innovations in toxicology can more rapidly and inexpensively screen chemicals for potential adverse biological effects.
- EPA has made great advances in the development of NAMs for filling information gaps for decision-making and integrating those tools and data streams into chemical risk assessment.
- EPA has worked with other stakeholders to leverage resources and develop NAMs that can support different regulatory contexts.
- Building confidence in the use of NAMs for regulatory decision-making is key to the increased implementation of these methods.

EPA

Questions?

Questions

Q. Mary Butow: Is there a system or database that tracks the cases where the predicted read-across data have been incorrect (e.g., when a chemical that looks similar is later found to be more toxic than the surrogate chemical)? Knowing which chemistries tend to not follow the predicted structural activity relationships (SARs) would be helpful for future use/application of read-across.

A. Maureen Gwinn: I know that those are tracked and they are incorporated into our process. We are working on something that we call Generalized Read-Across (GenRA) database. Some of the information you are asking about would likely be in that database but I am not sure that I can specifically answer questions about the format. I can connect you with our read-across folks to address your question, if that would be helpful. I think that we would all agree that tracking this information is important.

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Unregulated Contaminant Monitoring Rule (UCMR 4 & 5) Update

Rebecca Flynn
U.S. Environmental Protection Agency, Office of Water
513-569-7684
flynn.rebecca@epa.gov

Visuals follow. Please contact the speaker for more information.

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Unregulated Contaminant Monitoring Rule (UCMR 4 & 5) Update

FSTRAC

April 21, 2021

Becca Flynn, ORISE Research Participant
OW/OGWDW/SRMD/Technical Support Center
U.S. Environmental Protection Agency

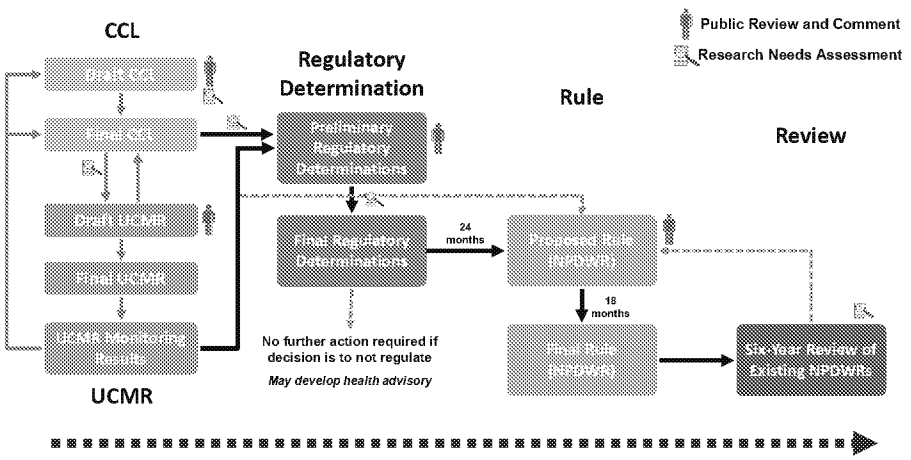
UCMR Overview

- Safe Drinking Water Act (SDWA) Regulatory Processes
- UCMR Program
- UCMR 4 Status Update
- UCMR 5 Proposal

The Safe Drinking Water Act (SDWA)

- Enacted in 1974, the SDWA authorized the Environmental Protection Agency (EPA) to set enforceable health standards for contaminants in drinking water
  - National Primary Drinking Water Regulations (NPDWRs)
- The 1986 SDWA amendments were the basis for the original "UCM" program
  - State drinking water programs managed the original UCM program
  - Public Water Systems (PWSs) serving > 500 people were required to monitor
- The 1996 SDWA amendments changed the process of developing and reviewing NPDWRs
  - Contaminant Candidate List (CCL)
  - UCMR (EPA-managed)
  - Regulatory Determination
  - Six-Year Review

General Flow of the SDWA Regulatory Processes



Increased specificity and confidence in the type of supporting data used (e.g., health, occurrence, treatment) is needed at each stage

UCMR

- The SDWA section 1445(a)(2), as amended in 1996, established requirements for the UCMR Program:
  - Issue a list of no more than 30 priority unregulated contaminants in drinking water, once every 5 years
  - Require PWSs serving a population >10,000 people as well as a nationally representative sample of small PWSs serving ≤10,000 people to monitor **(UCMR 1 - UCMR 4)**
  - Make analytical results publicly available in the National Contaminant Occurrence Database for Drinking Water (NCOD)
  - The EPA funds shipping/analytical costs for small PWSs
- The EPA manages program in partnership with States, tribes, and territories (hereafter referred to as "States") that volunteer to assist

UCMR Objective

- Collect nationally representative occurrence data for unregulated contaminants in drinking water that may require regulation under the SDWA
  - Consider data collected as part of future EPA decisions on actions to protect public health
  - Provide data to States, local governments, and the public for their use in decisions regarding public health protection

National occurrence data publicly available:
http://www.epa.gov/dwucmr/occurrence-data-unregulated-contaminant-monitoring-rule

UCMR History

- UCMR 1 (2001-2005)
  - Published in Federal Register (FR) on September 17, 1999
- UCMR 2 (2007-2011)
  - Published in FR on January 4, 2007
- UCMR 3 (2012-2016)
  - Published in FR on April 16, 2012
- UCMR 4 (2017-2021)
  - Published in FR on December 20, 2016
  - PWSs collected samples 2018-2020; Projected final dataset release late 2021/early 2022
- UCMR 5 (2022-2026)
  - Propose rule published in FR March 11, 2021 (86 FR 13846)
  - Anticipates PWSs collecting samples 2023-2025

Each new UCMR cycle is established via a revision to the rule for the ongoing/preceding cycle

UCMR 4

- Required Assessment Monitoring for 30 chemical contaminants between Jan 2018 – Dec 2020
- 10 Cyanotoxins
  - 'Total Microcystins (ELISA)', 6 microcystin congeners, nodularin-R, anatoxin-a, and cylindrospermopsin
- 20 additional contaminants (and 2 indicators)
  - Additional contaminants: 2 metals, 8 pesticides, 1 pesticide manufacturing byproduct, 3 brominated haloacetic acid (HAA) disinfection byproducts (DBP) groups, 3 alcohols, and 3 semivolatile organic chemicals (SVOCs)
  - Indicators: total organic carbon (TOC) and bromide (associated with HAAs)
- Current Status (Apr 2021): Post-monitoring phase
  - Complete data reporting and resampling
  - Complete data management activities
  - Continued enforcement
  - Finalize dataset in early 2022

UCMR 4 Applicability to PWSs

System Size (# of people served)	10 Cyanotoxins	20 Additional Chemicals*	Total # of Systems per Size Category
Small Systems (25 – 10,000)	800 randomly selected SW or GWUDI systems	800 randomly selected SW, GWUDI, and GW systems	1,600
Large Systems** (10,001 and over)	All SW or GWUDI systems (1,987)	All SW, GWUDI, and GW systems (4,292)	4,292
TOTAL	2,797	5,092	5,892

*Only systems subject to the Disinfectants and Disinfection Byproduct Rule (D/DBPR) need to monitor for the haloacetic acids (HAAs) and indicators
** Figures subject to change based on corrections to population served as of 12/31/15

UCMR 4 Sampling Locations

- HAA groups and indicators
  - HAAs: Disinfectants and Disinfection Byproduct Rule (D/DBPR) locations in the distribution system (DS) where HAA5 (a group of five regulated HAAs) are sampled
  - Indicators (TOC/Br): source water (SR) influent locations representing untreated water
- Cyanotoxins and remaining UCMR 4 contaminants
  - Entry point to the distribution system (EPTDS) after treatment is applied

UCMR 4 Sampling Frequency and Timing

Contaminant Type	Water Source	Time Frame	Frequency
Contaminants – **Cyanotoxins**	SW or GWUDI	March – November*	Systems must monitor twice a month for 4 consecutive months (total of 8 sampling events) Sample events must occur two weeks apart
Contaminants – **Additional Chemicals**	SW or GWUDI	Year-Round	Systems must monitor 4 times during a consecutive 12-month monitoring period Sample events must occur 3 months apart
	GW		Systems must monitor 2 times during a consecutive 12-month monitoring period Sample events must occur 5-7 months apart

*Reflects the warmer months when harmful algal blooms are more likely to occur

UCMR 4 Minimum Reporting Levels (MRLs) & Reference Concentrations

- UCMR 4 MRLs are based on the capability of laboratories to perform the analytical method
  - Establishing MRLs as low as possible (sometimes much lower than current health reference levels or health advisories) allows occurrence data reported to EPA to support sound decision-making, including those cases where new health information may lead to lower health values
- Reference concentrations were provided for most UCMR 4 contaminants from EPA sources (e.g., OW health advisories, human health benchmarks for pesticides, IRIS)
  - A health-based value to put detections greater than MRL into context
  - Subject to change as new health assessments are completed
  - Not legally enforceable federal standards

UCMR 4 Data

- Quarterly updates of results:
  - NCOD: https://www.epa.gov/dwucmr/occurrence-data-unregulated-contaminant-monitoring-rule
    - January 2021 dataset (most recent) is the tenth release of data for UCMR 4
    - Next posting expected late April
    - Updates will occur approximately quarterly until we receive the last of the data (late 2021). Results are subject to change following further review by analytical laboratories, PWSs, States, and EPA.
  - UCMR 4 Data Summary: https://www.epa.gov/dwucmr/data-summary-fourth-unregulated-contaminant-monitoring-rule
    - Summarizes NCOD results (e.g., the number of PWSs with results above the minimum reporting level (MRL) and/or reference concentration)

UCMR 4 Data Summary (as of January 2021)

- ~83% of data received (10 of 12 quarters with 6-month reporting lag)
- ≈36,000 sample results from ≈5,000 PWSs for metals (Ge and Mn)
- ≈35,000 sample results from ≈5,000 PWSs for pesticides
  - alpha-hexachlorocyclohexane, chlorpyrifos, dimethipin, ethoprop, oxyfluorfen, profenofos, tebuconazole, total permethrin (cis- & trans-), and tribufos
- ≈35,000 sample results from ≈5,000 PWSs for SVOCs
  - quinoline, o-toluidine, and butylated hydroxyanisole
- ≈35,000 sample results from ≈5,000 PWSs for alcohols
  - 1-butanol, 2-methoxyethanol, and 2-propen-1-ol
- ≈33,000 sample results from ≈3,400 PWSs for cyanotoxins
  - total microcystins, anatoxin-a, and cylindrospermopsin
- ≈60,000 sample results from ≈5,000 PWSs for HAAs

UCMR 4 Data Summary (as of January 2021)

- Metals
  - Manganese:
    - 2% of PWSs and 0.5% of sample results > reference concentration of 300 µg/L
    - 89% of PWSs and 70% of sample results ≥ MRL of 0.4 µg/L
  - Germanium: no reference concentration available
    - 13% of PWSs and 7% of sample results ≥ MRL of 0.3 µg/L
- Pesticides
  - Very few sample results > reference concentrations
  - Alpha-hexachlorocyclohexane:
    - 0.5% of PWSs and 0.07% of sample results > reference concentration (10^{-6} cancer risk) of 0.006 µg/L
    - No PWSs and no sample results > reference concentration (10^{-4} cancer risk) of 0.6 µg/L

UCMR 4 Data Summary (as of January 2021)

- SVOCs
  - Quinoline:
    - 1.5% of PWSs and 0.3% of sample results > reference concentration (10^{-6} cancer risk) of 0.01 µg/L
    - 0.02% of PWSs and 0.003% of sample results > reference concentration (10^{-4} cancer risk) of 1 µg/L
  - No reference concentrations provided for o-toluidine and butylated hydroxyanisole for UCMR 4; very few detections ≥ MRL
- Alcohols
  - 2-propen-1-ol no detections above the reference concentration of 35 µg/L
  - 1-butanol no detections above the reference concentration of 700 µg/L
  - No reference concentration for 2-methoxyethanol; very few detection ≥ MRL

UCMR 4 Data Summary (as of January 2021)

- Cyanotoxins
  - Very few sample results > reference concentration
  - Total microcystins:
    - 0.2% of PWSs and 0.02% of sample results > reference concentration (infants/young children) of 0.3 µg/L
    - No PWSs and no sample results > reference concentration (children/adults) of 1.6 µg/L
    - Samples for individual microcystins and nodularin-R are only analyzed if the total microcystins result is ≥ 0.3 µg/L; thus, there are very few results for those analytes.
  - Cylindrospermopsin:
    - 0.03% of PWSs and 0.003% of sample results > reference concentration (infants/young children) of 0.7 µg/L
    - No PWSs and no sample results > reference concentration (children/adults) of 3 µg/L
  - Anatoxin-a:
    - No reference concentration available; some sample results ≥ MRL of 0.03 µg/L

UCMR 4 Data Summary (as of January 2021)

- Disinfection byproducts
  - As expected, there are many sample results of HAA6Br and HAA9 based on at least one HAA in the group ≥ its individual MRL; no reference concentrations available for the groups
  - HAA5: 8.8% of PWSs and 2.1% of sample results > maximum contaminant level (MCL) of 60 µg/L
  - HAA5 results for UCMR 4 are not reflective of the compliance status for a PWS per the D/DBPR. HAA5 compliance is based on a locational running annual average at each monitoring location.
  - Additional results for indicators TOC and bromide are available

UCMR 4 Manganese Summary

Contaminant	MRL (µg/L)	Reference Concentration (µg/L)	Total Number of Results	Number of Results ≥MRL	Number of Results ≥Reference Concentration	% of Results ≥Reference Concentration	Total Number of PWSs with Results	Number of PWSs with Results ≥MRL	Number of PWSs with Results ≥Reference Concentration	% of PWSs with Results ≥Reference Concentration
manganese (Mn)	0.4	300	36,113	25,160	190	0.5%	5,007	4,479	99	2%

Manganese Reporting by Facility Water Type

Facility Water Type	Number of Results for Mn	Number of Results for Mn ≥MRL	Number of Results for Mn ≥MRL at Large Systems (serving > 10,000)	Number of Results for Mn ≥MRL at Small Systems (serving ≤ 10,000)
Surface Water (SW)	13,193	9,655	8,842	813
Ground Water (GW)	21,006	14,232	12,861	1,371
Ground Water Under the Direct Influence (GWUDI)	484	240	217	23
Mix (MX)	1,430	1,033	970	63
Total	36,113	25,160	22,890	2,270

PWS Mn Results by State: Exceeding Health Values (>300 ug/L)

State	Number of PWSs with Results >Reference Concentration (300 ug/L)	State	Number of PWSs (Cont.)
09*	1	MI	2
AK	1	MN	7
AL	1	NC	3
AR	1	NE	3
AZ	1	NH	1
CA	3	NJ	3
CO	1	NM	3
CT	5	NY	7
FL	2	OH	1
GA	3	OR	2
IA	1	PA	7
ID	1	RI	3
IL	1	SC	2
IN	4	SD	1
LA	2	TX	3
MA	15	UT	1
MD	1	VA	1
ME	1	WA	2
		WI	2
		Totals: 37	**99**

*A Tribe located in Region 9

UCMR 5 Proposal

- UCMR 5 proposal published on March 11, 2021 (86 FR 13846)
- Proposes monitoring for 30 contaminants
  - PWSs would monitor for 29 per- and polyfluoroalkyl substances (PFAS) and lithium
- EPA hosted two identical virtual meetings (via webinar) on April 6 and 7, 2021, to discuss the proposed UCMR 5
- Public comment period closes May 10, 2021
  - UCMR 5 Docket ID No. EPA–HQ–OW–2020–0530

A list of stakeholder meetings/webinar materials are publicly available:
http://www.epa.gov/dwucmr/unregulated-contaminant-monitoring-rule-ucmr-meetings-and-materials

America's Water Infrastructure Act (AWIA) of 2018

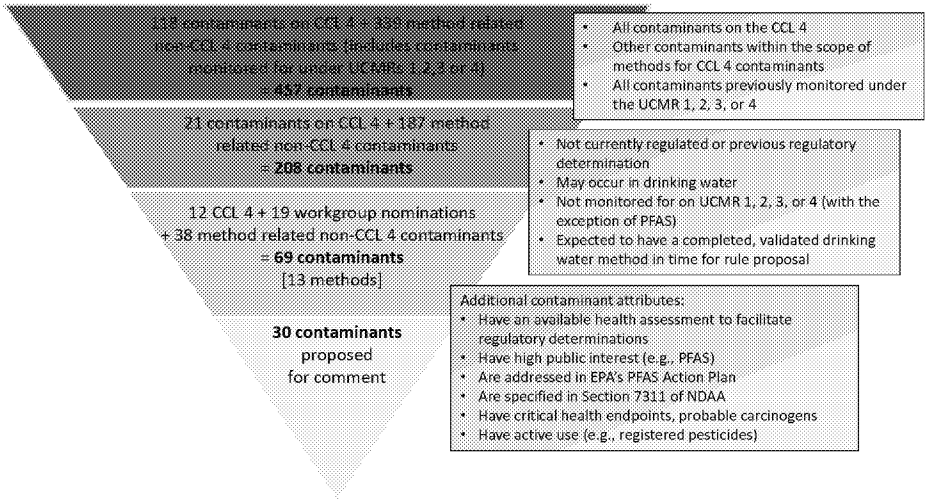
- The SDWA was amended in 2018 by Public Law 115-270
  - AWIA section 2021, Enacted October 23, 2018
- Key changes to UCMR 5 (SDWA section 1445(j)):
  - Require PWSs serving between 3,300 and 10,000 to monitor
  - Ensure that only a representative sample of PWSs serving < 3,300 people monitor
- Limitations:
  - Subject to the availability of appropriations and sufficient laboratory capacity to accommodate the analyses
- Authorization of Appropriations:
  - Additional $15,000,000 per fiscal year for which sampling is required to be carried out
- Under AWIA provisions, EPA continues to be responsible for all analytical costs associated with monitoring at systems serving ≤ 10,000 people

UCMR 5 Applicability to PWSs per AWIA

System[1] Size (# of people served)	National Sample: Assessment Monitoring Design	Total # of Systems per Size Category
Small Systems (25 – 3,299)	800 randomly selected systems (CWSs[2] and NTNCWSs)	800
Small Systems (3,300 – 10,000)	All systems (CWSs and NTNCWSs)	~5,100
Large Systems (10,001 and over)	All systems (CWSs and NTNCWSs)	~4,400
TOTAL		**~10,300**

[1] Systems provide water for human consumption through pipes or other constructed conveyances to at least 15 service connections or serves an average of at least 25 people for at least 60 days a year
[2] CWS = community water system; NTNCWS = non-transient non-community water system

UCMR 5 Contaminant Prioritization Process



Proposed UCMR 5 Contaminants: 29 PFAS + Lithium

EPA Method 533	
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	4,8-dioxa-3H-perfluorononanoic acid (ADONA)
1H, 1H, 2H, 2H-perfluorohexane sulfonic acid (4:2 FTS)	Hexafluoropropylene oxide dimer acid (HFPO-DA) (GenX)
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	**Perfluorobutanesulfonic acid (PFBS)**
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	Perfluorodecanoic acid (PFDA)
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	Perfluorododecanoic acid (PFDoA)
Perfluoro-3-methoxypropanoic acid (PFMPA)	**Perfluoroheptanoic acid (PFHpA)**
Perfluoro-4-methoxybutanoic acid (PFMBA)	Perfluorohexanoic acid (PFHxA)
Perfluorobutanoic acid (PFBA)	**Perfluorohexanesulfonic acid (PFHxS)**
Perfluoroheptanesulfonic acid (PFHpS)	**Perfluorononanoic acid (PFNA)**
Perfluoropentanesulfonic acid (PFPeS)	**Perfluorooctanesulfonic acid (PFOS)**
Perfluoropentanoic acid (PFPeA)	**Perfluorooctanoic acid (PFOA)**
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	Perfluoroundecanoic acid (PFUnA)
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	*PFAS monitored under UCMR 3 are in **bold***
PFAS Analyte Unique to EPA Method 537.1	
N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	Perfluorotetradecanoic acid (PFTA)
N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	Perfluorotridecanoic acid (PFTrDA)
EPA Method 200.7 or Alternate SM 3120 B or ASTM D1976-20	
Lithium	

Timeline of UCMR 5 Activities

2018	2019	2020	2021
← UCMR 5 Development →			Publish Final Rule
Method Development Stakeholder Meeting **(June 6, 2018)**	Pre-Proposal Stakeholder Meeting **(July 16, 2019)**	Applicability date February 1, 2021 Publish Proposal, 60-day Public Comment Period, Stakeholder Meeting **(April 6 & 7, 2021)** **Post Proposal: Initiate Implementation →** • Lab Approval Program • SDWARS registration/notification/inventory for PWSs • Partnership Agreements, State Monitoring Plans, PWS Inventory • Ground Water Representative Monitoring Plans (GWRMP) submitted to EPA six months prior to the PWS's scheduled sample collection • Outreach/trainings	Publish UCMR 5 Final Rule **(Anticipated December 2021)**

Timeline of UCMR 5 Activities

2022	2023	2024	2025	2026
Pre-sampling Activity by EPA	**Sampling Period**			**Post-sampling Activity**
• Manage Lab Approval Program • Organize Partnership Agreements and State Monitoring Plans • Begin PWS SDWARS registration/ inventory • Review GWRMP submittal • Conduct outreach/trainings	← **EPA Implementation Activities** → • Provide compliance assistance • Implement small system monitoring • Post data quarterly to NCOD **PWS Sample Collection; Laboratory Analysis; Reporting** • All large systems serving more than 10,000 people; • All small systems serving between 3,300 and 10,000 people; • 800 small systems serving fewer than 3,300 people			**PWSs, Laboratories** • Complete resampling, as needed • Conclude data reporting **EPA** • Complete upload of UCMR 5 data to NCOD

More Information

- UCMR Main Web Page
  - https://www.epa.gov/dwucmr
- UCMR 4
  - https://www.epa.gov/dwucmr/fourth-unregulated-contaminant-monitoring-rule
- Occurrence Data
  - https://www.epa.gov/dwucmr/occurrence-data-unregulated-contaminant-monitoring-rule
- UCMR 5
  - https://www.epa.gov/dwucmr/fifth-unregulated-contaminant-monitoring-rule
  - UCMR 5 Docket (EPA-HQ-OW-2020-0530) at http://www.regulations.gov for federal register notice and supporting documents

If You Have Questions Following This Presentation

- UCMR Contacts
  - Brenda Bowden: bowden.brenda@epa.gov
  - Melissa Simic: simic.melissa@epa.gov
- UCMR Lab Approval Program
  - UCMR_Lab_Approval@epa.gov
- UCMR Sampling Coordinator
  - UCMR_Sampling_Coordinator@epa.gov
- Safe Drinking Water Information
  - https://www.epa.gov/ground-water-and-drinking-water/safe-drinking-water-information

Questions?

Appendix

Laboratory Approval Program

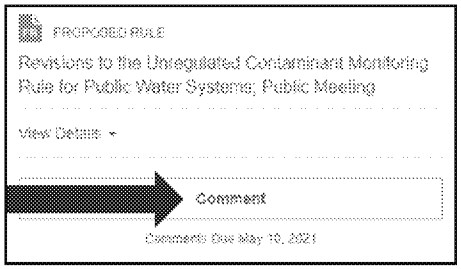
- Program is **Open**
- Laboratory Approval Program for UCMR 5 is expected to be similar to the process used for all previous UCMR cycles
- Laboratories are encouraged to apply for method-specific UCMR 5 approval as early as possible
  - EPA anticipates that PWSs that will collect samples in the first year of monitoring will make arrangements for sample analyses soon after the final rule is published
- Interested laboratories will request program registration materials by emailing EPA at UCMR_Lab_Approval@epa.gov

Comments on the UCMR 5 Proposed Rule

- Go to http://www.regulations.gov
- Enter Docket ID EPA-HQ-OW-2020-0530
- Click Search button

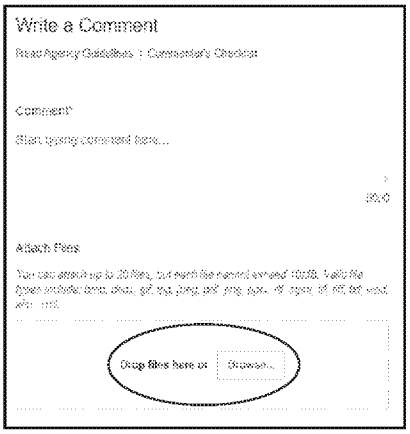
Comment Process/Accessing Docket

- The UCMR 5 docket should pop up on the next screen
- Click on the Comment button below the Proposed Rule



Comment Process/Accessing Docket

- Enter comment and all required information on next screen
- Upload a document by clicking on the Browse… button
- Click on the Submit Comment button at the bottom of the page



Comment Process/Accessing Docket

- Once submitted, comments cannot be edited or removed
- Do not electronically submit any information you consider to be Confidential Business Information (CBI)
- Multimedia submissions (audio, video, etc.) must be accompanied by a written comment
  - Written comment is considered the official comment and should include discussion of all points you wish to make
- EPA public comment policy is at: http://www.epa.gov/dockets/commenting-epa-dockets

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Potential of Manganese-induced Neurologic Harm to Formula Fed Infants

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Visuals follow. Please contact the speakers for more information.

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Potential of Manganese-induced Neurologic Harm to Formula Fed Infants

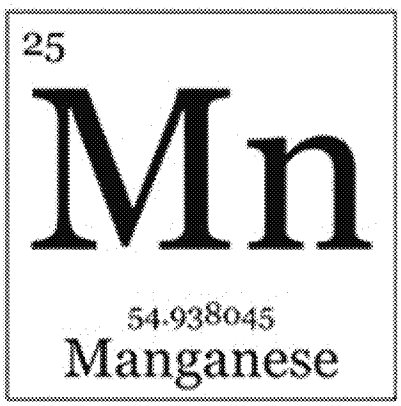
Deanna Scher, Kris Klos and Helen Goeden

April 21, 2021

PROTECTING, MAINTAINING AND IMPROVING THE HEALTH OF ALL MINNESOTANS

Outline

- Background
- Workflow
- Formula Study
- Water Studies
- Risk Assessment
- Conclusions



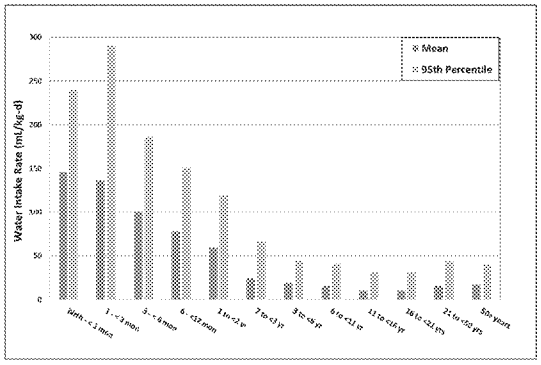
Background – What is Manganese?

- Naturally occurring element
- Essential nutrient*

Age	Adequate Intake (mg/day)	Upper Limit (mg/day)
0 - 6 mon	0.003	?
7 – 12 mon	0.6	?
1 – 8 yr	1 – 1.5	2 - 3
9 yr & over	1.6 – 2.3	6 - 11

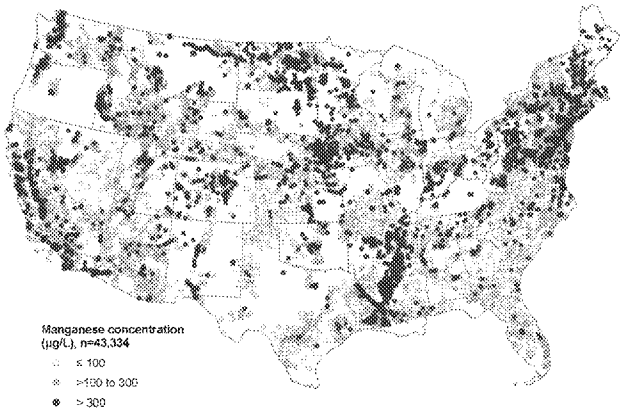
US Institute of Medicine, 2001

- Neurotoxic at high levels
- More easily absorbed when in water
- Infants at greatest risk of over-exposure
  - Rapidly developing
  - ↑ absorption AND ↓ elimination
  - High fluid intake rates



Background - Mn in drinking water

U.S. groundwater concentrations
(McMahon et al. 2019)

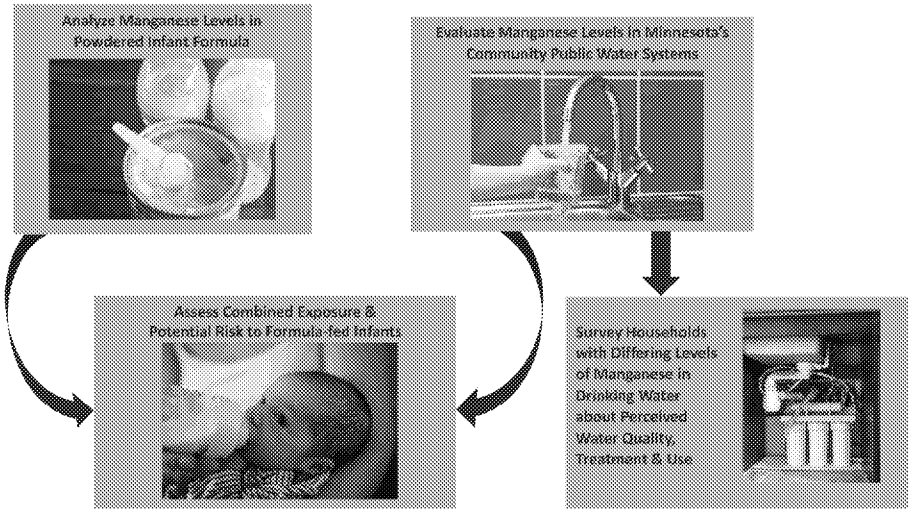


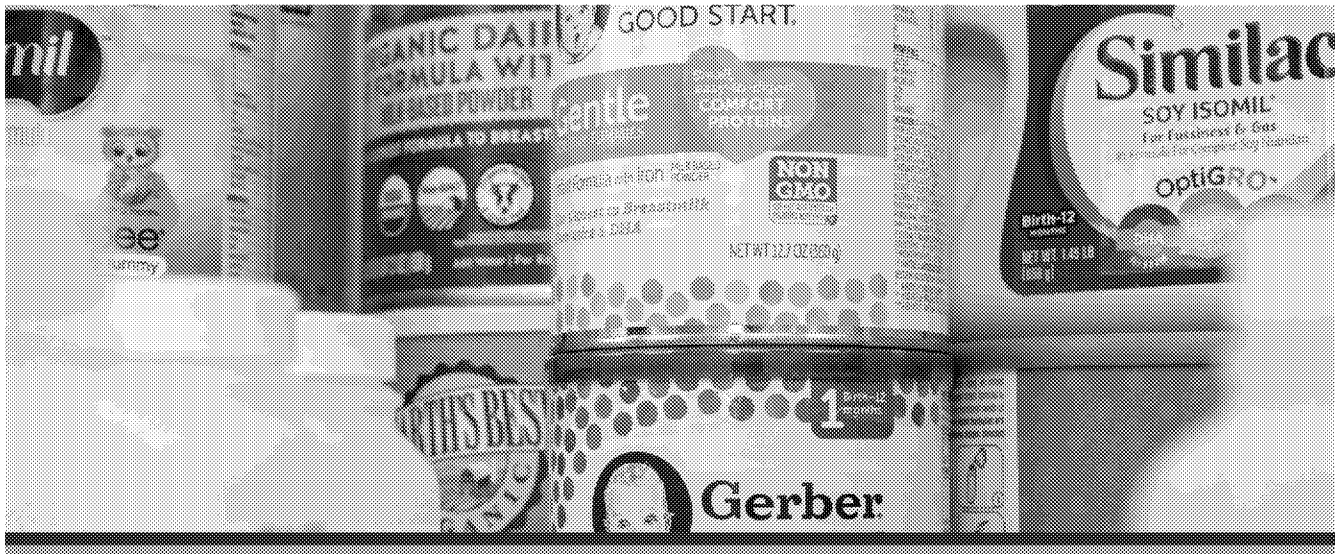
- Common in water – higher in groundwater
- 1979: EPA SMCL of 50 µg/L to enhance consumer acceptance of public water
- 2003: EPA decided not to regulate Mn in DW
- 2004: EPA HAL of 300 µg/L (no safe level for infants established)
- Currently undergoing new EPA re-evaluation
  - Sampled finished water from CWS 2018-2020 under UCMR4
- 2011: MDH published short-term HBGV of 100 µg/L; POD based on neurobehavioral effects in neonatal rats

Background: Mn in formula

- Breastmilk levels are <15 µg/L
- Mn purposefully added to formula
  - FDA set a minimum [~34 µg/L] but no maximum
- MDH's HBGV based, in part, on older published studies that relied upon label concentrations

Workflow





Formula Study
How much manganese is in powdered formula?

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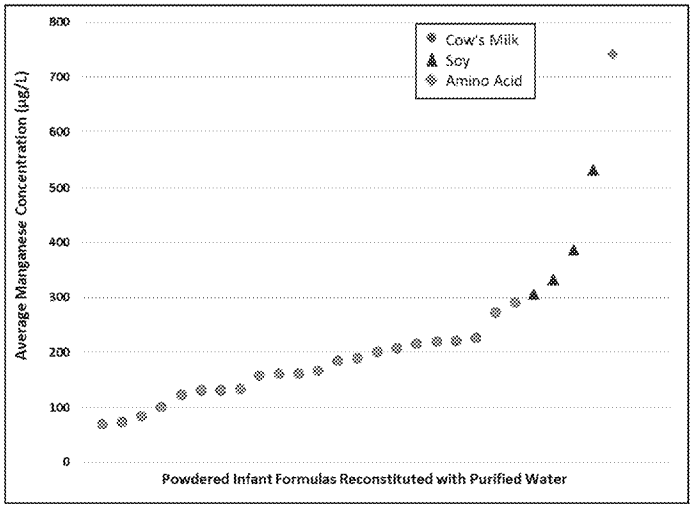
Selected 27 powdered formulas

- Top ten sold in US
- Variety of suppliers
  - Major brands – Enfamil®, Gerber®, Similac®
  - Store brand - Target's Up&Up™
  - 2 organic brands – Earth's Best®, The Honest Company®
- Different bases – Cow's milk, soy, amino acid

Reconstituting Formula

- Formulas mixed with purified water according to label instructions
- Two rounds – two different people
- Samples analyzed by the MDH Public Health Lab

Formula Results



- Manganese higher in soy than cows' milk formula
- Amino acid formula highest manganese

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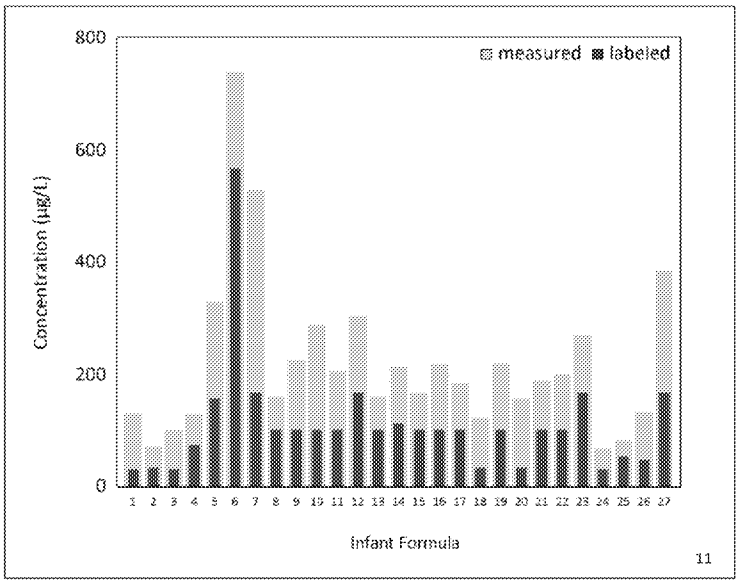
Formula Results

- Measured Mn concentrations higher than those reported on the labels



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WATER STUDIES

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Mn in Community Water Systems (CWS)

Majority of CWS samples collected as part of MDH's General Water Chemistry Project, 2010-2014 (raw and finished)

Results also available for some Minnesota systems through EPA's UCMR4 monitoring, 2018-2020 (finished water)

2,726 samples from both MDH monitoring and UCMR (~95% of Minnesota's CWS)

- Within-system results averaged to create one result per system
- Systems with raw water results only: Considered treatment technologies to determine if likely represents finished water

Mn in CWS - Results

- Avg. conc. > MDH HBGV of 100 µg/L in 27% of CWS
  - CWS >100 µg/L estimated to serve 345,094 people
- Avg. conc. > EPA HAL of 300 µg/L in 10% of Minnesota CWS
- Mn concentration increased as system size decreased

Mn drinking water concentration (µg/L) by system size

# of people served	n systems	25th %ile	50th %ile	75th %ile	95th %ile
500 or less	425	16.7	47.1	146.0	666.0
501-3,300	295	5.0	26.3	85.3	518.0
3,301-10,000	89	5.0	5.0	35.9	276.5
>10,000	89	0.91	6.7	27.1	202.3

- UCMR4 sampling took place at all large CWS (>10,000 people) and at 1.5% of small/medium systems to provide "nationally representative" sample of CWS

Private Well Survey & Monitoring Study Results

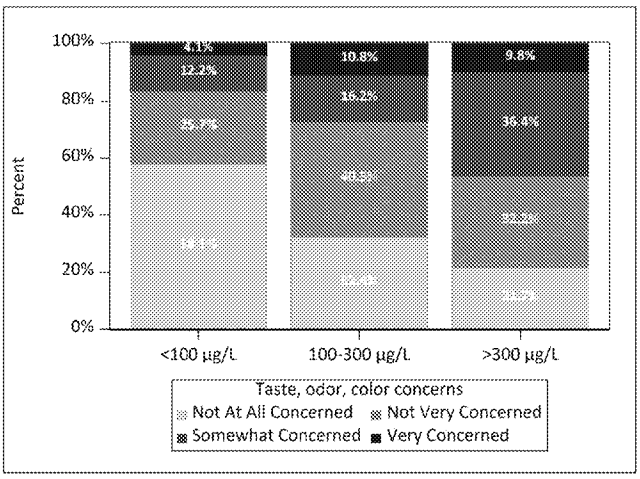
Outdoor, untreated faucets

- 71% > 100 µg/L (MDH)
- 56% > 300 µg/L (EPA)
- ↑ Mn = ↑ "taste, odor, or color" concern
- 54% of respondents with Mn >300 µg/L "not at all" or "not very" concerned about the taste, odor, and color of water

Indoor drinking water (follow-up sampling)

- 38% with Mn > 100 µg/L;
- Only 22% of these households "mostly or always" drink bottled water or get drinking water from another source

Aesthetic concerns by Mn concentration (n=254)



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MDH's Reference Dose (RfD)

- Basis
  - POD = 25 mg/kg-d, LOAEL (lowest dose tested)
  - Neurological effects observed following short-term exposure to neonatal rats (Kern et al. 2010)
  - Uncertainty Factors = 10A, 10H, and 3L-to-N

RfD = 25 / 300 = 0.083 mg/kg-d

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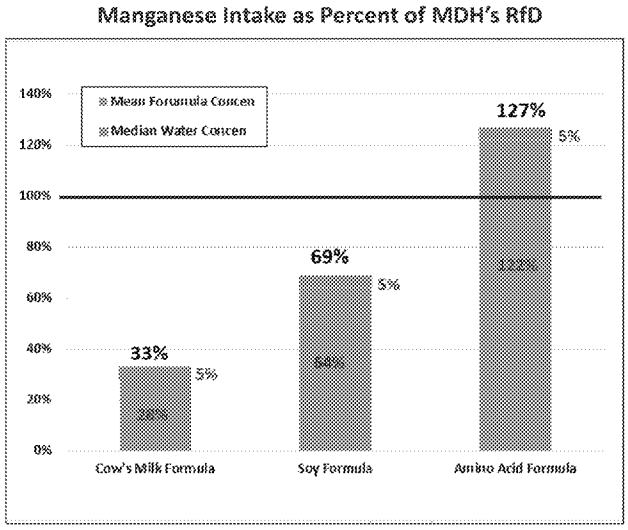
Scenario Assessed – Central Tendency

Mean
- Formula concentration
- Infant water intake

Water Concentration
- Median (29 µg/L)
- 95th %tile (562 µg/L)



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Scenario Assessed – Central Tendency

Mean

- Formula concentration
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Water Concentration

- Median (29 µg/L)
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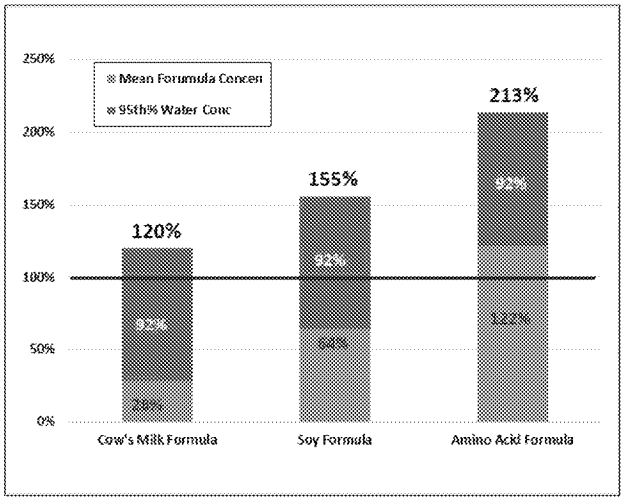

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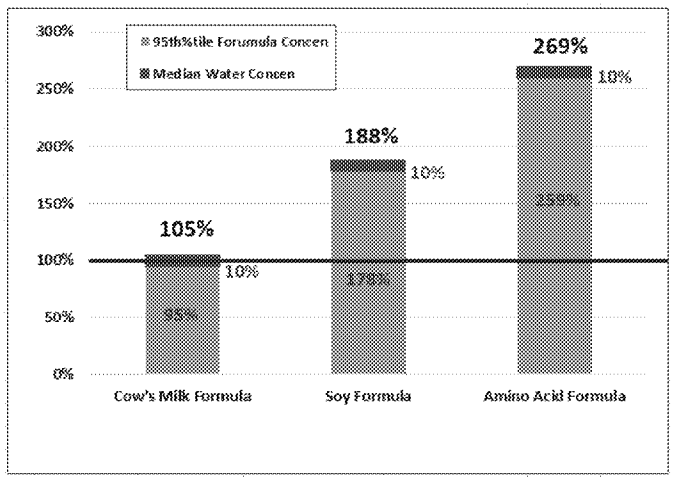
Scenario Assessed – Upper End

95th percentile

- Formula concentration
- Infant water intake

Water Concentration

- Median (29 µg/L)
- 95th %tile (562 µg/L)



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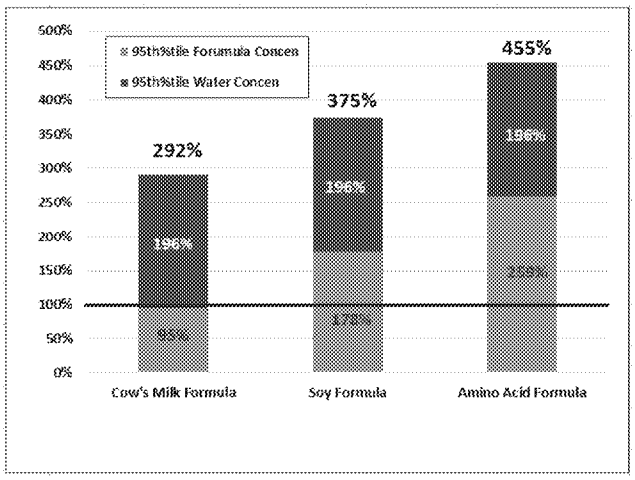
Scenario Assessed – Upper End

95th percentile
- Formula concentration
- Infant water intake

Water Concentration
- ~~Median (29 µg/L)~~
- 95th %tile (562 µg/L)



Key Limitations & Uncertainties

- Community Water System assessment uncertainties
- Private Wells not considered in risk assessment
  - ~50% of private wells > 100 µg/L (MDH Guidance)
- Point of departure – lowest dose tested resulted in effects
- Formula
  - Limited sample size, single lot #
  - Two independent mixing events per formula
- Absorption in human infants vs. lab animal neonates

Take Aways

- CWS water concentrations commonly exceed health-based guidance (>100 µg/L)
  - MDH response plan: 1) Re-sample CWS>100 µg/L to verify; 2) Send Health Risk Advisory letter if exceedance; 3) Provide technical support
- Concentrations above guidance values not a deterrent to drinking
- Formulas may contain high levels of manganese, potentially leaving no room for contribution from water
- Federal Regulators (EPA and FDA) must work together to address potential risk to formula fed infants

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Thank you

Financial support

Clean Water, Land, & Legacy Amendment funding to MDH (formula testing and private well study)

Dakota County Environmental Resources Department (private well study)

Contact Information

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Dakota County

DEPARTMENT OF HEALTH

WWW.HEALTH.MN.GOV

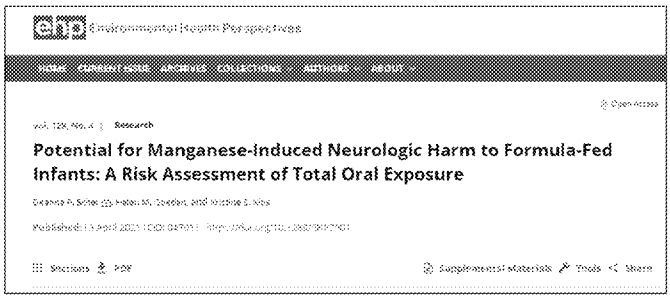
CLEAN WATER LAND & LEGACY AMENDMENT

DEPARTMENT OF HEALTH

More Information

MDH and Dakota County Manganese in Private Wells survey and monitoring study Summary Report:
https://www.health.state.mn.us/communities/environment/risk/docs/studies/wiisereport.pdf

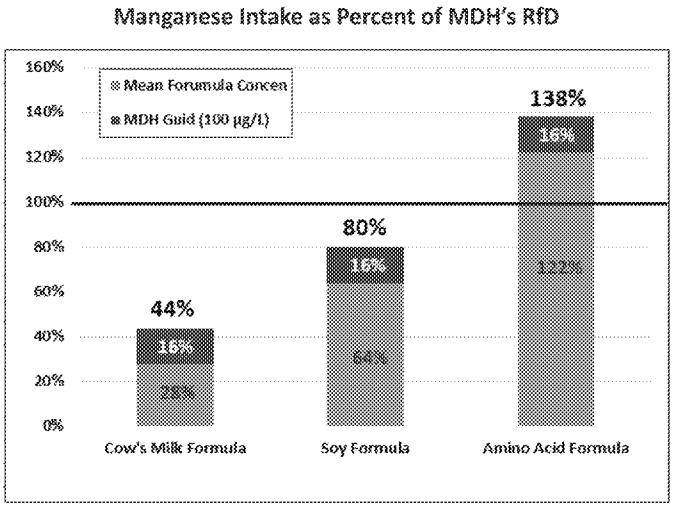
https://ehp.niehs.nih.gov/doi/full/10.1289/EHP7901



Scenario – Central Tendency Using Guidance Values

Mean
- Formula concentration
- Infant water intake

Water Concentration
- MDH (100 µg/L)
- EPA HA (300 µg/L)



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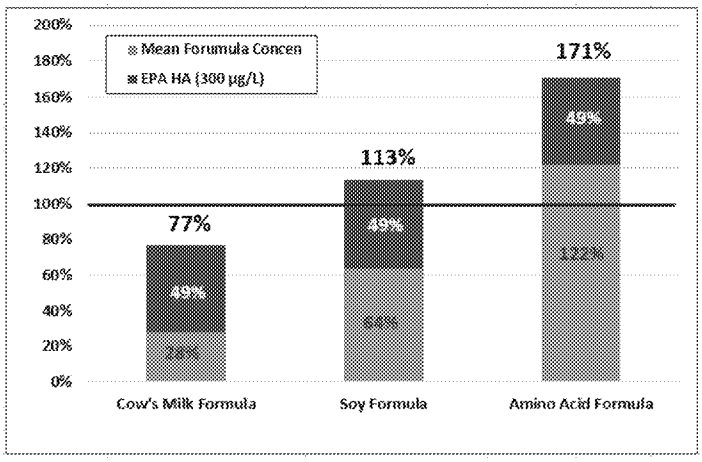


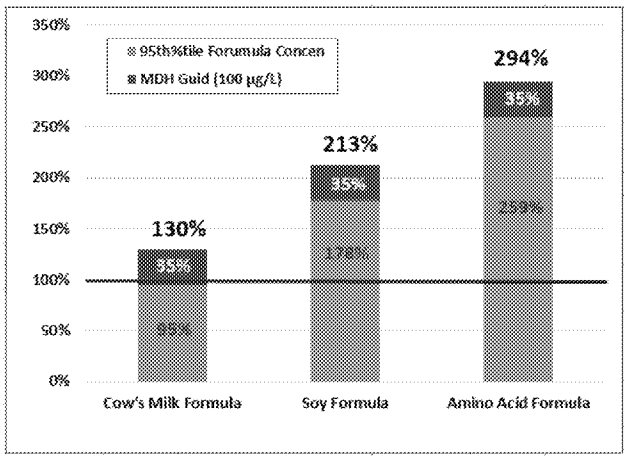
Scenario – Upper End Using Guidance Values

95th percentile

- Formula concentration
- Infant water intake

Water Concentration

- MDH (100 µg/L)
- EPA HA (300 µg/L)



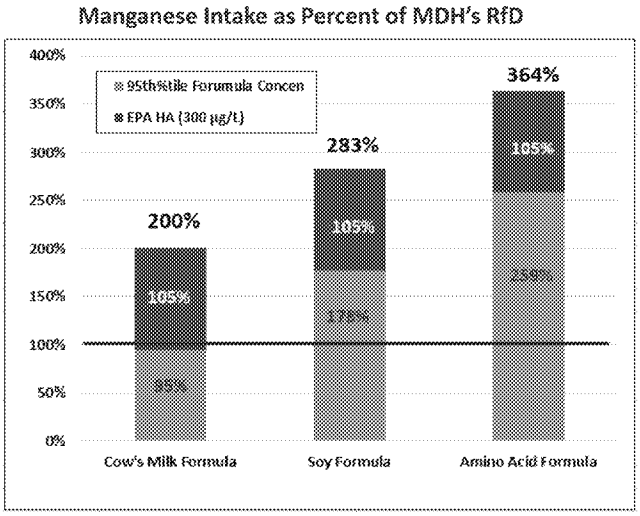
Scenario – Upper End Using Guidance Values

95th percentile

- Formula concentration
- Infant water intake

Water Concentration

- MDH (100 µg/L)
- EPA HA (300 µg/L)



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Questions

Q. Divinia Nolasco Ries: Do you know the window of vulnerability for manganese exposure?

A. Helen Goeden: The window of vulnerability is not exclusive, but the major concern is for infants under six months because of their elevated absorption and decreased ability to eliminate manganese. If infants under six months are exposed to high levels of manganese, they likely would have a much higher body burden than older infants and children. We do not think that this is necessarily the exclusive window of vulnerability but this is the group that is particularly vulnerable.

Overview of the Manganese Health Risk Assessment; Drinking Water Standards for Manganese

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Visuals follow. Please contact the speakers for more information.

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Overview of the Manganese Health Risk Assessment

Jonathan Ali, Ph.D., Toxicologist
Environmental Health Program

April 21, 2021

Manganese as a Nutrient & Health Hazard

Dose of Manganese (mg $_{Mn}$ /kg $_{body\ weight}$ /day) →

Deficiency

Rarely occurs in developed countries

Mn is abundant in our diet

Adverse Effects include:

- Altered lipid and carbohydrate metabolism
- Decreased serum cholesterol
- Poor bone mineralization
- Changes to hair and skin pigmentations

Beneficial

Mn is a "cofactor" for several enzymes and metabolism

Aids bone mineralization

Adequate Intakes (AI) Values

- 1.6-2.3 mg/day for adults
- **~0.02-0.03 mg/kg/d** for a typical adult
- 0.003 mg/day for infants
- **~0.0004 mg/kg/d** for infants (≤6 months old)

Toxicity

Potentially causes oxidative stress, damaging neurons

Adverse effects include:

- Parkinson-like symptoms
- Altered mood
- Reduced intellectual performance (e.g. IQ)
- Other neuromotor effects

Recommended Dose Limits include 0.025-0.083 mg/kg/d

- Includes EPA, ATSDR, Cal EPA, MDH & Health Canada

Reference: https://ods.od.nih.gov/factsheets/manganese-healthprofessional/

Manganese Advisory Science Timeline

2004	**EPA** recommends Health Advisory of 300 µg/L based on adult exposure factors and a nutritional study in adults
2006	**California Environmental Protection Agency Office of Environmental Health Hazard Assessment (OEHHA)** recommended child-specific Screening Levels due to concern or neurodevelopmental effects
2012	**CDC's Agency for Toxic Substances and Disease Registry (ATSDR)** completes its review of Manganese risks from inhalation and ingestion
2016	**Health Canada** proposed a maximum acceptable concentration (MAC) of 100 µg/L, based on neurological effects in rodents and infant exposure considerations
2018	**Minnesota Dept. of Health** recommends a health-based guidance value of 100 µg/L based on neurological effects in rodents and infant exposure considerations
2019	**EPA** updated recommended drinking water ingestion rates (Exposure Factors Handbook); **NIH Office of Dietary Supplements** updated guidance; **Kuller et al. (2019)** estimates reduced IQ scores in Canadian children who drink Manganese-containing water (cross-sectional study)
2020	**NHDES Environmental Health Program** completed its review of the existing Manganese advisory

Risk Assessment of Manganese
EPA Health Advisory

EPA recommends a **reference dose (RfD) of 0.14 mg/kg/d** (EPA, 2004)

- Based on a short-term human dietary study that observed no adverse effects in adults at 10 mg/d
- Body weight adjustment (÷70 kg for adults) yields 0.14 mg/kg/d
- For drinking water, EPA recommends an additional modifying factor of 3 to account for bioavailability (EPA, 2004)
- EPA default drinking water assumptions for 2004 were 70 kg body weight, 2.0 L/d water intake and 20% relative source contribution

$$\frac{0.14\ \text{mg/kg/d} \times 0.20 \times 70\ \text{kg}}{3\ (\text{Modifying Factor}) \times 2.0\ \text{L/d}} = 0.3\ \text{mg/L}$$

EPA Advisory of 0.3 mg/L or 300 µg/L

Reference: https://www.epa.gov/sites/production/files/2014-09/documents/support_cc1_magnese_dwreport_0.pdf

Risk Assessment of Manganese

Risk Assessment for Infants

NHDES EHP recommends a **reference dose (RfD) of 0.125 mg/kg/d**

- Adjusted Point of Departure as EPA (EPA, 2004), based on updated EPA Body Weight assumptions (10 mg_{Mn}/day ÷ 80 kg = 0.125 mg/kg/d)
- A 50% relative source contribution was applied based on Mn content estimated in infant formula (Yoon, et al., 2019; Brown & Foos, 2009)
- For drinking water, EPA recommended an additional modifying factor of 3 to account for bioavailability (EPA, 2004) and EHP retained this
- Applied the BW-adjusted water intake rate for infants from ages 0-12 months, for 95th percentile consumers as reported in EPA's 2019 update

$$\frac{0.125 \text{ mg/kg/d} \times 0.50}{3 \text{ (Modifying Factor)} \times 0.174 \text{ L/kg/d}} = 0.1 \text{ mg/L}$$

Proposed Drinking Water Value of 0.1 mg/L or 100 µg/L

Reference: https://www.epa.gov/sites/production/files/2014-09/documents/support_cc1_magnese_dwreport_0.pdf

Drinking Water Standards for Manganese

April 21, 2021

Brandon Kernen, Administrator
Drinking Water & Groundwater Bureau, NHDES

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

NHDES Drinking Water & Groundwater Bureau – Manganese Proposal

- Require water systems to meet 0.3 mg/L enforceable drinking water standard for Mn by July 1, 2022
- Require water systems to implement routine public notification to customers when manganese exceeds 0.1 mg/L (notification level)

Most Challenging Aspects of Developing the Mn Drinking Water Standard

- There are currently minimal regulatory requirements for Mn at the federal or state level (only secondary MCL). Very few states (if any) have taken enforceable action on Mn
- EPA's health advisory(2004) and recent guidance to other states clearly indicates short-term exposure to elevated levels (0.3 mg/L) of Mn is a concern for infants (acute health concerns)
- NHDES' toxicologists' assessments as well as other states for Mn in drinking water using the best available studies, indicates short-term exposure to elevated levels (0.1-0.3 mg/L) of Mn is a concern for infants (acute health concerns)
- Exceedance of standards for acute health risk contaminants are generally addressed by implementing a "Do Not Drink" order
- Should NHDES address manganese exceedances by issuing: 1) A "Do Not Drink" order; or 2) By requiring aggressive notification?

Why Now?

- Assumed the undesirable taste and odor issues that are coupled with elevated manganese would be a deterrent to use as a drinking water source
- After years of working with water systems to voluntarily address Mn, several active sources remain elevated
- Several systems have treatment for Mn that produce irregular results
- Investments to address new PFAS and arsenic standards are occurring. Mn needs to be considered as part of this process (cost effectiveness/treatment space/treatment train)
- Recent assessments by NHDES, Health Canada, Minnesota & guidance from USEPA coupled with recent monitoring data confirm some people in NH are exposed to levels of Mn that are not considered safe
- The federal government provides the states good scientific data on the toxicity of drinking water standards, but the process/schedule for making enforceable standards needed to prevent exposure is not adequate for some states

Near-term Actions NHDES Will Take

- Water systems still with sources with elevated Mn will be provided outreach materials on the health concerns
- Water systems will be asked if the source with Mn is actually still in use – some sources are emergency/back-up wells only
- Water systems will be encouraged to take voluntary measures
  - Education
  - Utilize alternative sources
  - Treatment
  - Flow-mix

Who is Potentially Impacted

	# of Sources for Community Water Systems	# of Sources for Non-Transient Water Systems
Will Exceed 0.1 mg/ L	85 sources (19 with Mn treatment)	76 sources (31 with Mn treatment) (30 schools/daycares)
May Exceed 0.1 mg/L	32 sources (8 with Mn treatment)	13 sources (6 with Mn treatment) (5 schools/daycares)
0.1 mg/L Total	**117 sources**	**89 sources**
Will Exceed 0.3 mg/L	28 sources (7 with Mn treatment)	30 sources (12 with Mn treatment) (13 schools/daycares)
May Exceed 0.3 mg/L	1 source (1 with Mn treatment)	2 sources (2 with Mn treatment) (No schools/daycares)
0.3 mg/L Total	**29 sources (approx. 8 with treatment)**	**32 sources (approx. 14 with treatment)**

Legal Requirement to Adopt a 0.3 mg/L Standard

1) Per NH state law, NHDES must adopt a groundwater standard when the federal government issues an advisory limit for a contaminant.

2) USEPA has issued a federal advisory limit for manganese of 0.3 mg/L in 2004.

3) NHDES adopted 0.3 mg/L as a groundwater standard in December 2020

4) Per drinking water rules, groundwater standards are enforceable drinking water standards. 0.3 mg/L is an enforceable drinking water standard

Proposed 0.3 mg/L Drinking Water Standard – Required by State Law

485-C:6 Ambient Groundwater Quality Standards (*aka AGQS*). –
I. The commissioner shall establish and adopt ambient groundwater quality standards for regulated contaminants which adversely affect human health or the environment. Ambient groundwater standards shall apply to all regulated contaminants which result from human operations or activities, but do not apply to naturally occurring contaminants. Where state maximum contaminant levels have been adopted under RSA 485:3, I(b), or established in law, ambient groundwater quality standards shall be equivalent to such standards. Where federal maximum contaminant level or health advisories have been promulgated under the Federal Safe Drinking Water Act or rules relevant to such act, ambient groundwater quality standards shall be no less stringent than such standards.

Drinking Water Health Advisory for Manganese

Prepared by:

U.S. Environmental Protection Agency
Office of Water (4304T)
Health and Ecological Criteria Division
Washington, DC 20460

http://www.epa.gov/safewater/

EPA-822-R-04-003
January, 2004

The lifetime health advisory value of 0.3 mg/L will protect against concerns of potential neurological effects. In addition, this document provides a One-day and 10-day HA of 1 mg/L for acute exposure. **However, it is advised that for infants younger than 6 months, the lifetime HA of 0.3 mg/L be used even for an acute exposure of 10 days, because of the concerns for differences in manganese content in human milk and formula and the possibility of a higher absorption and lower excretion in young infants.**

New Manganese AGQS Approved 12/17/20 by the Joint Legislative Committee on Administrative Rules (JLCAR)

- Revised from 0.84 mg/L to 0.3 mg/L
- Effective 01/01/21

Adopting the 0.1 mg/L Notification Requirements

- 485:3 Drinking Water Rules – requires NHDES to adopt rules or standards to protect human health
- NHDES has determined that in order to protect the health of infants, public notification is required when manganese exceeds 0.1 mg/L in drinking water

Draft Public Notification Language for Mn > 0.3 mg/l

- **DO NOT GIVE THE WATER TO INFANTS.** *Infants below the age of 12 months old who drink water containing manganese in excess of the AGQS could experience harmful and lasting effects on their nervous system. Manganese is an essential nutrient but excessive levels of manganese in drinking water is associated with increased risk of health problems such as impaired motor function and learning, as well as harm to the nervous system.*

- Water, juice, and formula for children under 12 months of age should not be prepared with this tap water. Bottled water or other water low in manganese should be used for infants until further notice.

- **DO NOT BOIL THE WATER.** Boiling, freezing, filtering, or letting water stand does **NOT** reduce the manganese level. Excessive boiling can make the manganese more concentrated because manganese remain behind as the water evaporates.

- Adults and children older than 12 months can drink the tap water (manganese is a concern for infants because they cannot process manganese in the same way adults can). However, if you are pregnant, breastfeeding or have specific health concerns (such as liver disease), you may wish to consult your health care professional. General health-related questions may be directed to the NHDES Environmental Health Program at (603) 271-6802.

- Manganese in drinking water can come from natural (geological) or industrial sources.

Draft Public Notification Language for Mn > 0.1 mg/l

- **This not an emergency.** If it had been you would have been notified immediately. *The Manganese level is above 0.1 mg/L (0.1 parts per million) which poses a health concern for certain infants less than 12 months old. Making formula or foods with water containing manganese levels above 0.1 mg/L can increase an infant's risk of health problems such as impaired motor function and learning, as well as harm to their nervous system.*

- Older children and adults process manganese differently than infants. Anyone who is older than 12 months can continue to drink the water as long as manganese level is below 0.3 mg/L. Pregnant and breastfeeding women can also drink the water if the manganese level is below 0.3 mg/L.

- **What should I do?** Infants, the elderly, and those with liver disease should avoid food with high water content (e.g. soup). The tap water may be used to prepare foods, such as pasta, where the water is drained prior to consumption. It is not necessary to use alternate water; however, if you have specific health concerns, please contact your health care professional. General health-related questions may be directed to the NHDES Environmental Health Program at (603) 271-6802.

Federal Efforts on Manganese

1) Limited until recently
2) National Manganese Workgroup Tried to Fill the Void - MN, NJ, MA, VT, WA EPA, Health Canada, Quebec Public Health Agency
3) USEPA is requiring that water systems test for manganese under the Unregulated Contaminant Monitoring Rule – will provide USEPA data to make a regulatory determination on Mn
   - NH already has data from water systems for manganese
   - Many other states had limited/no data
   - States with elevated detects worked with USEPA to provide notification to customers
   - **As of 01/01/21, 2% of public water systems sampling under UCMR4 exceed 0.3 mg/L**
4) Mn is on USEPA's Contaminant Candidate List (CCL) – List USEPA maintains of approx. 100 contaminants that is may consider regulating in the future

*"The **Contaminant Candidate List** (CCL) is a **list** of drinking water **contaminants** that are known or anticipated to occur in public water systems and are not currently subject to EPA drinking water regulations"*

Question & Contact Information

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Environmental Health Program
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Office - 603 271 1359

Questions and Comments

C. Richard Carrier: Currently, Health Canada's drinking water guideline for manganese is 120 µg/L (not 100 µg/L).

Q. Sille Larsen: What defines "may exceed"?

A. Brandon Kernen: As we mentioned during the presentation, for a long time, we have been requiring drinking water systems in New Hampshire to perform manganese sampling every three years. We cannot take the average because we usually only have 4 or 5 data points with a lot of scatter (e.g., non-detect values, 0.4 mg/L, 0.2 mg/L) from small systems that might not be regenerating their green fan filters on a frequent enough basis, do not have a full-time operator, and do not maintain things correctly. Although we saw a lot of scatter, there was enough evidence indicating that the short-term exposure level could be exceeded, so we created the category of "may exceed." In these cases, the facilities had non-detect data but they also had data that looked like water was passing through treatment unaffected. We thought this was the best way to summarize our data.

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Class-Based Assessments for Drinking Water Contaminants with Limited Toxicity

Bradley Lampe
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Visuals follow. Please contact the speaker for more information.

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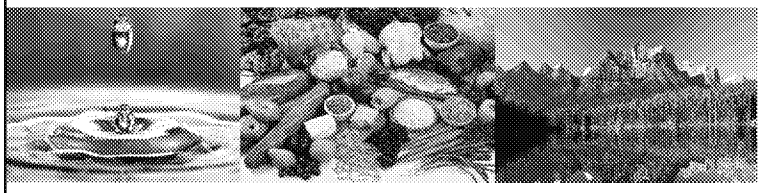
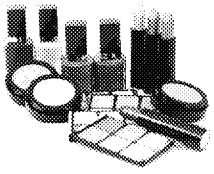
Class-Based Assessments for Drinking Water Contaminants with Limited Toxicity Information

NSF INTERNATIONAL
789 N. Dixboro Road, Ann Arbor, Michigan 48105 USA

Bradley J. Lampe, MPH
Principal Research Toxicologist
April 21, 2021

NSF International Toxicology Services Department

For more than 20 years, we have evaluated the safety associated with contaminants that leach from products in contact with drinking water.

Risk Assessment at NSF:

- ✓ Critically evaluate toxicology studies on drinking water contaminants
- ✓ Propose total allowable concentrations (TACs) for drinking water contaminants that extract from products we certify
- ✓ 160 risk assessments with external peer review (Health Advisory Board) completed with 8-10 comprehensive drinking water assessments completed per year

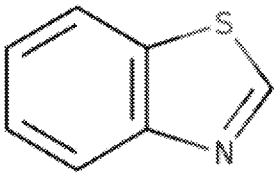
Problem: Limited Toxicology Data

> Quantitative risk assessment cannot be performed with limited data
- No mutagenicity or clastogenicity data
- No subchronic repeated dose study

> Qualitative risk assessment paradigms:
- 10 ppb if non-genotoxic and no repeated dose study available
- 50 ppb if non-genotoxic and repeated dose study < 90 days available
- Threshold of Toxicological Concern (TTC)

> Read-Across Approaches

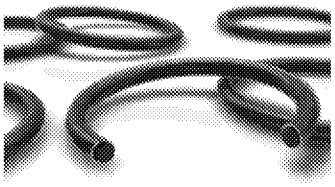
> Quantitative Structure-Activity Relationship (QSAR)-based Approaches



Example: Benzothiazole

> Negative for mutagenicity and clastogenicity

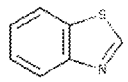
> Unpublished 90-day feeding study in rats
- Only one dose level tested
- Only secondary source available, limited details on methods and results



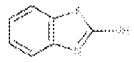
> Read-across with structurally similar chemicals that possess both:
- A heterocyclic thiazole moiety
- Similar genotoxicity profile
- Similar metabolic pathways (if data available)

Example: Benzothiazole

> 2-Mercaptobenzothiazole proposed as a possible analog
- Robust dataset
- Structurally similar although possesses additional sulfhydryl group



Target



Analog

> Analog had intact (closed-ring) metabolites in orally exposed rats
- Benzothiazole had open (cleaved) thiazole ring metabolites in guinea pigs exposed IP

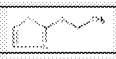
> Analog was mutagenic and clastogenic in *in vitro* eukaryotic test systems
- Benzothiazole has genotoxicity profile of low concern.

Subchronic Data for Aromatic Thiazoles

> Considered data from other thiazole compounds
- Compounds considered have low genotoxicity concern and/or no structural alerts

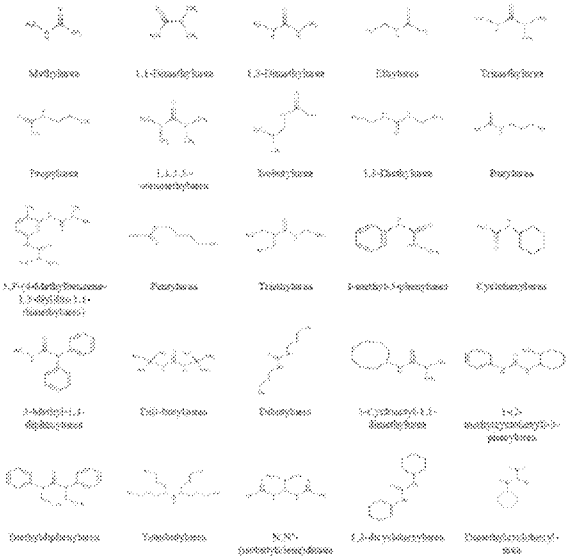
> NOAEL of 50 mg/kg-day for 2-acetylthiazole
- Only robust 90-day study available for class
- TAC of 100 ppb based on a 3000-fold UF, and 70 kg person drinking 2 L water per day.

> Thus, qualitative TAC of 50 ppb is health-protective.

Class Member	90-Day Rat NOAEL	Notes
Target Compound	5.1 mg/kg-day	Only one dose tested
	0.29 mg/kg-day	Only one dose tested
	24.4 mg/kg-day	Only one dose tested
	8.63 mg/kg-day	Only one dose tested
	1.21 mg/kg-day	Only one dose tested
	50 mg/kg-day	Acceptable study, multiple dose levels
	No data	-
	No data	-
	No data	-

Example: Alkyl-Substituted Urea Compounds

- Class boundaries:
  - Urea compounds with a carbamide group with aliphatic or aromatic substitutions
  - Excludes atoms other than C, O, N
  - Excludes functional groups other than alkyl or phenyl groups
  - Excludes cyclic ureas
- OECD QSAR Toolbox
  - Identify class compounds with genotoxicity data
  - Read-across for class compounds with no data



Read-Across Approach for Genotoxicity

- Evaluation of mutagenicity and clastogenicity: good data density within the class
- Allows for higher-confidence data gap filling within the class
- Some data gaps remained due to presence of tertiary carbons

Empirical data only

Molecular Structure																									
Molecular Weight	74	88	88	88	102	102	116	116	116	116	130	142	144	150	170	172	172	174	198	224	226	232	264	268	284
Mutagenicity	Neg	Neg	Neg					Neg						Neg				Neg			Neg	Neg	Neg	Neg	Neg
Clastogenicity	Neg	Neg		Neg		Neg	Neg	Neg			Neg					Neg		Neg				Neg	Neg	Neg	Neg

Empirical data and read-across results

Molecular Structure																									
Molecular Weight	74	88	88	88	102	102	116	116	116	116	130	142	144	150	170	172	172	174	198	224	226	232	264	268	284
Mutagenicity	Neg	Neg	Neg	Neg (RA)	Neg (RA)	Neg (RA)		Neg	Neg (RA)	Neg (RA)	Neg (RA)	Neg (RA)	Neg (RA)	Neg	Neg (RA)	Neg (RA)		Neg	Neg (RA)	Neg (RA)	Neg	Neg	Neg	Neg	Neg
Clastogenicity	Neg	Neg	Neg (RA)	Neg	Neg (RA)	Neg	Neg	Neg	Neg (RA)	Neg (RA)	Neg	Neg (RA)	Neg (RA)		Neg (RA)	Neg		Neg	Neg (RA)	Neg (RA)		Neg	Neg	Neg	Neg

Read-Across Approach for Repeated Dose Toxicity

> Low data density

> Only two 90-day repeated dose studies

> Studies of shorter duration available for low- and high-MW compounds

> Most conservative POD is for 1,3-dimethylurea (NOAEL of 30 mg/kg-day based on maternal toxicity in a developmental study)

- Results in a TAC of 60 ppb, based on a 70 kg adult drinking 2 L/day,
- **Compared to qualitative TAC of 50 ppb**

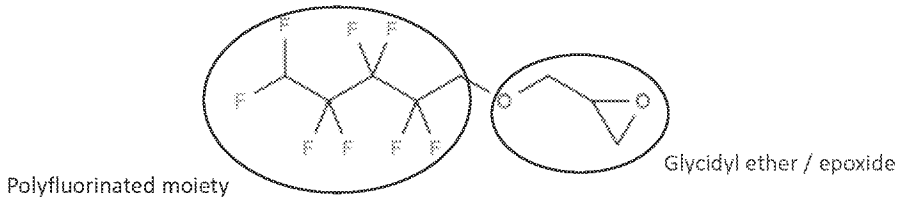
Molecular Structure																									
Molecular Weight	74	88	88	88	102	102	116	116	116	116	130	142	144	150	170	172	172	174	198	224	226	232	264	268	284
Repeated Dose NOAEL (mg/kg-day)		540 (28-day)	50 (28-day)														30 (90-day)						100 (42-day)	30 (90-day)	
Reproductive Toxicity NOAEL (mg/kg-day)		300 (42-day)	**30 (GD 6-15)**																				1000 (42-day)	450 (60-day)	150 (GD 6-15)

Example: Epoxy F ("Partial Surrogate" Approach)

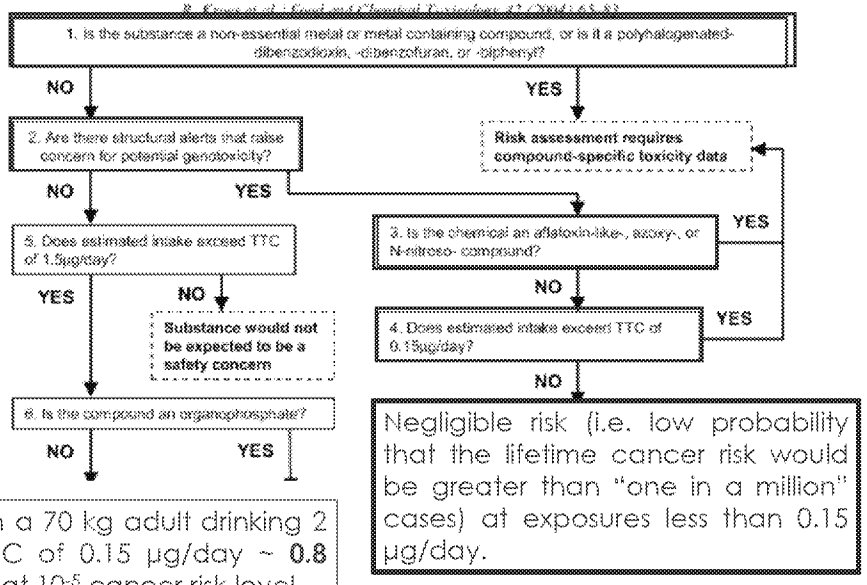
> No data on target substance

> Multiple structural alerts for genotoxicity based on QSAR analysis

> Lack of data on a structural analog with both structural moieties of concern



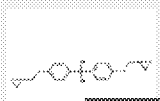
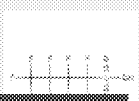
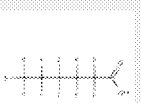
Epoxy F: Threshold of Toxicological Concern



Negligible risk (i.e. low probability that the lifetime cancer risk would be greater than "one in a million" cases) at exposures less than 0.15 µg/day.

Based on a 70 kg adult drinking 2 L/day, TTC of 0.15 µg/day ~ **0.8 ppb TAC** at 10^{-5} cancer risk level.

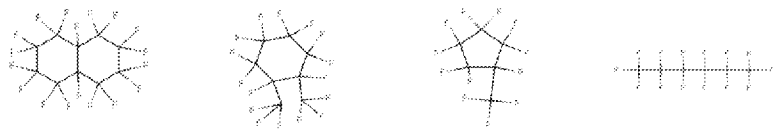
Example: Epoxy F ("Partial Surrogate" Approach)

	Glycidyl Ethers				Polyfluorinated Compounds	
Chemical Name	Bisphenol A Diglycidyl Ether	Phenyl Glycidyl Ether	Butanediol Diglycidyl Ether	Diglycidyl Resorcinol Ether	Perfluorobutane Sulfonate	Perfluorohexanoic Acid
Chemical Structure						
Animal POD	15 mg/					30 mg/kg-day
Human Equivalent POD	4 mg/kg-day	Not estimated	0.127 mg/kg-day	3.2 mg/kg-day	18.9 mg/kg-day	8 mg/kg-day
Total Uncertainty Factor	100	300	Linear extrapolation to origin (evaluated as carcinogen)	1000	1000	100
Reference Dose	0.04 mg/kg-day	0.0003 mg/kg-day		0.02 mg/kg-day	0.02 mg/kg-day	0.08 mg/kg-day
Total Allowable Concentration	300 µg/L	2 µg/L	0.2 µg/L	20 µg/L	100 µg/L	600 µg/L

TAC range of 0.2 ppb to 600 ppb

Epoxy F TAC = 0.8 ppb

Perfluorinated Tracer Compounds – Developing a Class Assessment



- The perfluorinated tracers are intended for direct dosing into drinking water systems and are typically cyclic, perfluorinated alkanes, with an anticipated dosing level of 1 ppm in drinking water. Cyclic alkanes consisting only of carbon and fluorine atoms containing at least six carbon atoms
- They include linear, aliphatic alkanes consisting only of carbon and fluorine atoms with a chain length of at least six carbon atoms

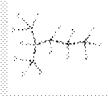
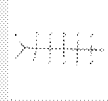
Does NOT include:

- Compounds containing atoms other than carbon and fluorine
- Unsaturated compounds, such as those containing double or triple covalent bonds
- Perfluorinated alkanes with fewer than six carbon atoms

Use of OECD QSAR Toolbox Version 4.4 to identify analogs

Categorization Type	Categorization Scheme	Number of Chemicals with Relevant Data
Data Gap: Genotoxicity (bacterial reverse mutation assay)		
Structural	Organic functional groups, Norbert Haider (halogen derivative <and> alkyl fluoride <and> alkyl halide)	339
Structural	Chemical elements (containing only C and F)	35
Mechanistic	DNA binding by OASIS (geminal polyhaloalkane derivatives)	31
Structural	Organic functional groups, EPA (aliphatic carbon <or> fluorine aliphatic attach <or> fused aliphatic ring unit <or> tertiary carbon; excludes chemicals that are members of any other category)	8
Data Gap: Carcinogenicity (oral)		
Structural	Organic functional groups, Norbert Haider (halogen derivative <and> alkyl fluoride <and> alkyl halide)	130
Structural	Chemical elements (containing only C and F)	7
Structural	Organic functional groups, EPA (aliphatic carbon <or> fluorine aliphatic attach <or> fused aliphatic ring unit <or> tertiary carbon; excludes chemicals that are members of any other category)	6
Data Gap: Clastogenicity (in vivo micronucleus test)		
Structural	Organic functional groups, Norbert Haider (halogen derivative <and> alkyl fluoride <and> alkyl halide)	56
Structural	Chemical elements (containing only C and F)	12
Structural	Organic functional groups, EPA (aliphatic carbon <or> fluorine aliphatic attach <or> fused aliphatic ring unit <or> tertiary carbon; excludes chemicals that are members of any other category)	4
Data Gap: Reproductive toxicity (NOAEL or NOEL)		
Structural	Organic functional groups, Norbert Haider (halogen derivative <and> alkyl fluoride <and> alkyl halide)	108
Structural	Chemical elements (containing only C and F)	13
Structural	Organic functional groups, EPA (aliphatic carbon <or> fluorine aliphatic attach <or> fused aliphatic ring unit <or> tertiary carbon; excludes chemicals that are members of any other category)	4

Category Assessment Approach

Chemical Name	Perflunafene (target compound)	Decafluoro-3,5-bis(trifluoromethyl) cyclohexane	Perfluoromethylcyclopentane	Perfluorohexane	Perfluorocyclohexane	Tridecafluoro-1,1,1,2,2,3,3,4,4,5,5,6,6-fluorohexane	Perfluoroheptane	Perfluorooctane
CAS Number	306-94-5	306-98-9	1805-22-7	355-42-0	355-04-4	355-37-3	335-57-9	307-34-6
Molecular Structure								
Molecular Weight (Da)	462.074	400.056	300.042	338.038	338.038	320.048	388.045	438.052
log P (octanol-water)	7.8[EST]	5.49[EST]	4.26[EST]	6.02[EST]	5.02[EST]	4.22[EST]	5.50[EST]	6.17[EST]
Water Solubility (mg/L)	0.003[EST]	0.01[EST]	0.51[EST]	0.00938[EST]	0.07[EST]	0.42[EST]	0.0132[EST]	0.002[EST]
Bacteria Reverse Mutation Assay	Study unreliable - insufficient details in available summary (ECHA)	NEGATIVE (Japan Existing Chemical Database)	Study unreliable - insufficient details in available summary (ECHA)	NEGATIVE (ECHA)	Study unreliable - insufficient details in available summary (ECHA)	NEGATIVE - ECHA	NEGATIVE - Japan Existing Chemical Database	NEGATIVE - Japan Existing Chemical Database
Chromosome Aberration Study	No data	NEGATIVE (Japan Existing Chemical Database)	No data	NEGATIVE (ECHA)	No data	No data	NEGATIVE - Japan Existing Chemical Database	NEGATIVE - Japan Existing Chemical Database
Repeated Dose (OECD 422)	No data	NOAEL > 1000 mg/kg-d	No data	28 day in rats with IV injection - not suitable for oral risk assessment (ECHA)	No data	No data	NOAEL > 1000 mg/kg-d	NOAEL = 300 mg/kg-d

Assessment approach

> Genotoxicity data are consistently negative

> Combined repeated dose studies with the reproductive and developmental screening assay identified for three of the class compounds.

> Little evidence of systemic toxicity was reported in OECD 422-compliant studies conducted with three of the class compounds at doses up to 1000 mg/kg-day.

- Some effects of unclear toxicological significance were reported in rats exposed to 1000 mg/kg-day
- Thus, the next lowest dose of 300 mg/kg-day is identified as an overall NOAEL for the class. '

> Quantitative risk assessment not possible, as no studies ≥ 90 days were identified.

> A comparative TAC of 200 ppb was identified, so the qualitative benchmarks are health-protective.

Thank you for your attention!

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Questions

Q. Sille Larsen: Considering what we just learned about manganese health risk, would or should NSF consider manganese treatment certification? Sorry for the off topic question.

A. Bradley Lampe: We mostly perform risk assessments on chemicals that have not undergone authoritative reviews or authoritative assessments by other agencies. For manganese, our organization is currently using the U.S. EPA Integrated Risk Information System (IRIS) oral reference dose (RfD) for the calculation of our action levels. For chemicals that have undergone authoritative reviews or assessments by other agencies, we would evaluate them with the applicable U.S. EPA IRIS toxicity value, or if there are other toxicity values that have been promulgated by other agencies, we would compare those to determine what ones are the most scientifically robust.

Chemical Safety for Sustainability Research Program (CSS)

Heidi Bethel, PhD
U.S. Environmental Protection Agency, Office of Research and Development
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Visuals follow. Please contact the speaker for more information.

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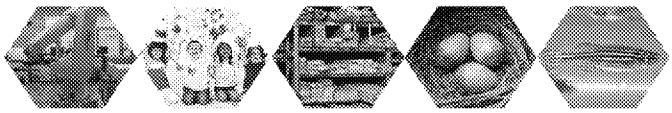
US EPA Office of Research and Development

Chemical Safety for Sustainability Research Program (CSS)

Federal-State Toxicology and Risk Analysis Committee
April 21, 2021

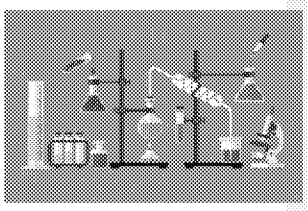


CSS Objectives

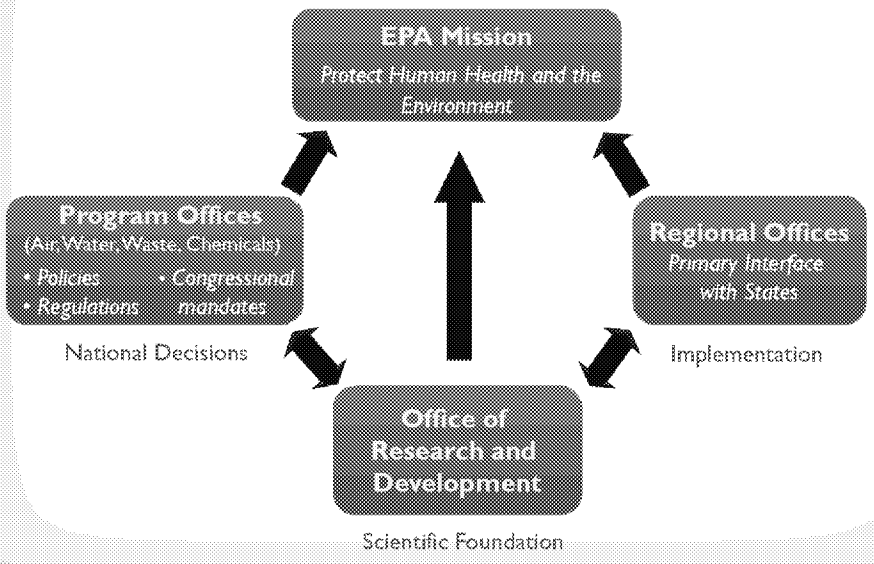
- Provide the information needed to inform Agency and partner decisions about chemicals.
- Accelerate the pace of chemical assessment and decision-making.
- Replace, Reduce, and Refine vertebrate animal testing.
- Provide scientific innovation and leadership to transform chemical screening and assessment practices.

Evolving Drivers of CSS Research

- Agency priorities continue to evolve;
  - Increased focus on EJ concerns;
  - Continued focus on development, testing and implementation of new approach methods.
- Revised regulatory drivers;
  - TSCA-Lautenberg Amendments.
- Continued concerns over emerging chemical contaminants, especially PFAS.
- Advancements in the toxicological and chemical sciences.

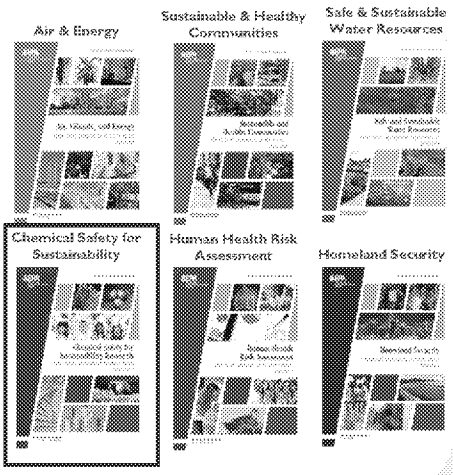


ORD's Role in EPA: Provide Mission Driven Science



ORD Strategic Research Action Plans

- Describe our research program at the strategic level for internal and external audiences.
- Developed in consultation with EPA partner offices, regions, other stakeholders and advisors--our guide for resource planning activities.
- Implemented by ORD's Centers.
- Planning and progress reviewed by the Board of Scientific Counselors (BOSC).
- Planning for next StRAP starts this summer

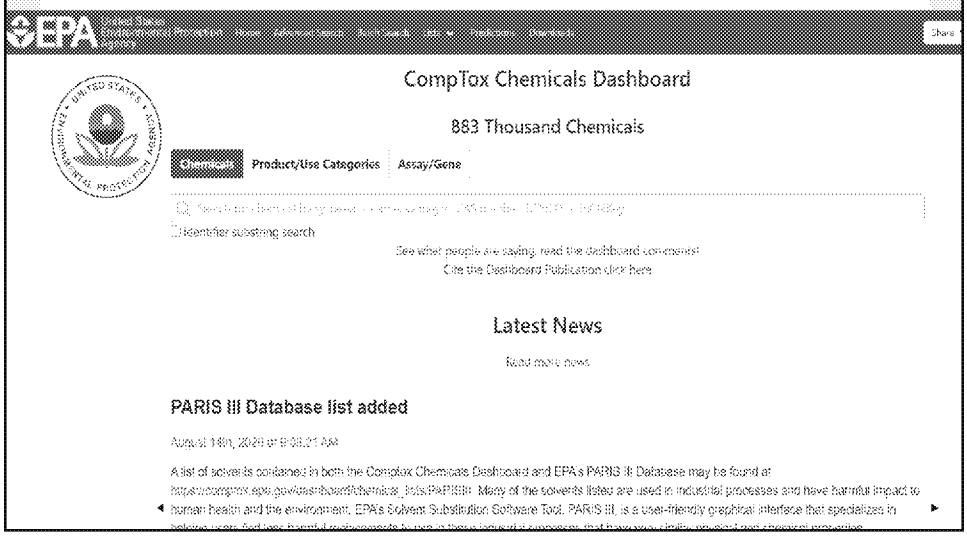


CSS Research Areas

Topic	Research Area
Chemical Evaluation	High-Throughput Toxicology
	Rapid Exposure Modeling and Dosimetry
	Emerging Materials and Technologies
Complex Systems Science	Adverse Outcome Pathways
	Virtual Tissue Modeling
	Ecotoxicological Assessment and Modeling
Solutions Driven Translation and Knowledge Delivery	Chemical Safety Analytics
	Informatics, Synthesis, and Integration

CompTox Chemicals Dashboard

https://comptox.epa.gov/dashboard

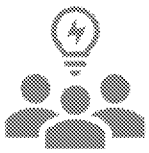


Ecotox Knowledgebase

https://cfpub.epa.gov/ecotox/

CSS Engagement with States and Federal Partners

- **Current approaches:**
  - Articles in ORD Science Matters Newsletter.
  - Meetings with the Environmental Council of States and Environmental Research Institute of the States.
  - Scientific meetings and outreach: Society of Toxicology; Society of Environmental Toxicology and Chemistry; International Society of Exposure Science



- **Other approaches:**
  - How can CSS be better informed about state and federal chemical interests, concerns and challenges?
  - How can the states and federal agencies become better informed about CSS products?

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https://www.epa.gov/aboutepa/about-chemical-safety-sustainability-research-program

EPA

Questions?

Comments

C. Shamima Akhter: Thank you all for joining us today. We will post the meeting summary to the SharePoint site and we will provide the link and log in information to access the SharePoint site. Thanks again and goodbye.

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Appendix A.

FSTRAC Webinar Registration List

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FSTRAC April 21, 2021 Webinar Registration List

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Appendix B.

FSTRAC Webinar Speaker Bios

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1. **HECD Priorities in FY 2021 – Betsy Behl, OW/EPA**
   Elizabeth (Betsy) Behl is the Director of the Health and Ecological Criteria Division (HECD) in the Office of Science and Technology in the Office of Water at EPA. HECD, is responsible for the national Water Quality Criteria program and regulation of contaminants in biosolids under the Clean Water Act (CWA), and science support for national primary drinking water regulations under the Safe Drinking Water Act (SDWA). CWA support includes development of national Ambient Water Quality Criteria (304(a)) to protect aquatic life and human health (including recreational uses) from nutrients, toxic substances and microbial contaminants and the national Biosolids Program. SDWA support includes toxicity support for regulatory activities including the six-year review of regulated contaminants, regulatory determinations, the unregulated contaminated monitoring rule, and the candidate contaminant list. HECD is also responsible for development of non-regulatory Health Advisories and Benchmarks containing health effects information on protective levels of unregulated pollutants in drinking water. In addition, HECD supports state development of bio-criteria programs, and regional support for biological evaluations for endangered species.

2. **Incorporating New Approach Methodologies in Risk Assessments – Maureen Gwinn, ORD/EPA**
   Dr. Gwinn has been with the U.S. Environmental Protection Agency (EPA) since 2006 and is currently the Director of the Biomolecular and Computational Toxicology Division (BCTD) in the Center for Computational Toxicology and Exposure (CCTE) in Office of Research and Development (ORD). Previously, Dr. Gwinn was Senior Science Advisor in the former National Center for Computational Toxicology (NCCT) in ORD, focusing on research translation of alternative toxicity testing, particularly as it relates to hazard characterization and risk assessment for regulatory decision-making. In this position, Dr. Gwinn led multidisciplinary teams to help advance the implementation of New Approach Methods (NAMs) in risk assessment and regulatory decision-making. Prior to this position, Dr. Gwinn served as the Senior Science Advisor to the Deputy Assistant Administrator for Science focusing on the role of science at the U.S. EPA, and prior to that she served as an Associate National Program Director for Community Public Health in the Sustainable and Healthy Communities National Research Program. Dr. Gwinn joined the U.S. EPA in the National Center for Environmental Assessment (NCEA) in ORD, where she worked on human health hazard assessments for the Integrated Risk Information System (IRIS) program.

3. **Unregulated Contaminant Monitoring Rule (UCMR 4 & 5) Update – Rebecca Flynn, OW/EPA**
   Rebecca Flynn (Becca) is an Oak Ridge Institute for Science and Education (ORISE) Participant within the Technical Support Center (TSC) of the Standards and Risk Management Division, Office of Ground Water and Drinking Water. She has a Master of Environmental Science degree from Miami University and earned her bachelor's degree in Marketing from the University of Northern Iowa. Becca has been with the TSC as an ORISE Research Participant for almost three years and has supported the UCMR team with rule development and implementation activities.

4. **Potential Manganese-induced Neurologic Harm to Formula-Fed Infants – Deanna Scher, Kristine Klos, and Helen Goeden, Minnesota Department of Health**

- **Dr. Deanna Scher** is an epidemiologist in the Environmental Health Division at the Minnesota Department of Health (MDH). Since joining MDH in 2007, Dr. Scher has worked on a variety of studies to assess exposures to, and health impacts from environmental contaminants, particularly among at-risk and vulnerable populations. She is a state-appointed member of the MDH Institutional Review Board and the Minnesota Department of Agriculture's Pesticide Management Plan Committee. She also currently serves as chair of the EPA Children's Health Protection Advisory Committee. Deanna received her Ph.D. in Environmental Health Sciences from the University of Minnesota, School of Public Health.

- **Dr. Kristine Klos** earned her Bachelors in Science degree at the University of Minnesota - Twin Cities. She then headed south to Houston, TX where she completed her PhD in Biomedical Sciences with an emphasis in Cancer Biology at the University of Texas Graduate School of Biomedical Sciences – MD Anderson Cancer Center. After a post-doc focused on cancer stem cells at the University of Wisconsin – Madison, Dr. Klos returned to Minnesota where she works at the Minnesota Department of Health and develops guidance for contaminants found in Minnesota groundwater. She can be found in her neighborhood pulling an empty wagon, and carrying a riderless tricycle and scooter home after her 4-yr old decides that she'd rather run.

- **Dr. Helen Goeden** has been a toxicologist and risk assessor for over 35 years in the area of environmental health. Her career focus has been on development and improvement of risk assessment methods and policies. For the past approximately 18 years she has worked at the Minnesota Department of Health (MDH) where she led the effort to expand the methods used for deriving human health-based drinking water guidance to include multiple exposure durations and to explicitly consider sensitive or more highly exposed populations (e.g., infants and children). In 2009 she helped to create MDH's Drinking Water Contaminants of Emerging Concern initiative. Prior to coming to MDH she worked at the Minnesota Pollution Control Agency and was responsible for the development and implementation of multi-media, multi-duration human health risk assessment methodology for evaluating and prioritizing contaminated sites. Dr. Goeden received her Bachelor's degree from the College of St. Scholastica in Duluth, MN and her Ph.D. from the Medical College of the University of Cincinnati, Ohio.

5. **Overview of the Manganese Health Risk Assessment; Drinking Water Standards for Manganese – Brandon Kernen and Jonathan Ali, New Hampshire Department of Environmental Services**

    - **Brandon Kernen** is the Manager of the Administrator of the Drinking Water and Groundwater Bureau at the New Hampshire Department of Environmental Services. He has over 25 years of professional experience and a graduate degree in Civil and Environmental Engineering from Tufts University and an undergraduate degree in Hydrology and Water Resources from the University of Arizona. He is a licensed Professional Geologist.

    - **Dr. Jonathan Ali** is an Environmental Toxicologist for the New Hampshire Department of Environmental Services (NHDES) where he supports the agency through chemical risk assessment of multiple environmental media. He obtained his Doctorate in Environmental Health & Toxicology from the University of Nebraska Medical Center, where he was a graduate fellow with the Water for Food Global Institute and the National Cancer Institute's Cancer Epidemiology Training Program.

6. **Class-Based Assessments for Drinking Water Contaminants with Limited Toxicity Information – Bradley Lampe, NSF**
   Bradley Lampe is a principal research toxicologist at NSF International and has been a member of NSF International's toxicology department since 2007. Mr. Lampe joined the risk assessment team in January 2015 and has since authored and successfully defended more than fifteen chemical risk assessments evaluating exposure from unregulated drinking water contaminants, and has presented his work at professional conferences both domestically and internationally. Mr. Lampe is also an expert in the regulation of food additives and dietary ingredients in the United States, and in the regulation of cosmetic products in the European Union. He has successfully prepared and submitted numerous regulatory submissions for new indirect food additives on behalf of NSF clients, and has written safety assessments for several new dietary ingredients including cannabidiol, kava and 5- hydroxytryptophan. Mr. Lampe is a full member of the Society of Toxicology as well as the Regulatory and Safety Evaluation Specialty Section (RSESS) of the Society of Toxicology.

7. **Chemical Safety for Sustainability Research Program (CSS) – Heidi Bethel, ORD/EPA**
   Dr. Heidi Bethel serves as Associate National Program Director for the Chemical Safety for Sustainability Research Program in the Office of Research and Development (ORD) at EPA. In this capacity, Heidi engages the Agency Program and Regional offices, states, and tribes to ensure that research products are communicated and translated to these partners. Heidi came to ORD after spending four years in EPA's Office of Chemical Safety and Pollution Prevention (OCSPP) in the Risk Assessment Division as a team lead for the risk evaluation of trichloroethylene, coordinating the research and review of environmental data under the statutory authority of the 2016 Lautenberg Amendments to Toxic Substances Control Act. Prior to OCSPP, she worked for twelve years in the Office of Water (OW), developing human health ambient water quality criteria and methodologies. Heidi holds a Ph.D. in Environmental Toxicology from the University of California, Riverside, and a B.S. in Biochemistry from the University of California, Los Angeles.

Message

From: Liguori, Krista [liguori.krista@epa.gov]
Sent: 12/7/2018 5:33:39 PM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]
Subject: GenX News Updates November 30th to December 7th

Hi All,

Here are the news updates for GenX from November 30th to December 7th.

Google Scholar / PubMed

- Urine and Serum Biomarkers of Per- and Polyfluoroalkyl Substances (PFAS) and Fluorinated Alternatives for Human Exposure Assessment: https://ehp.niehs.nih.gov/doi/abs/10.1289/isesisee.2018.P02.3400

Google News

- Dec 7
  - CFPUA submits formal comment on EPA draft toxicity assessment for GenX, other chemicals: http://www.wect.com/2018/12/06/cfpua-submits-formal-comment-epa-draft-toxicity-assessment-genx-other-chemicals/
  - North Carolina's Environmental Chief says Chemical Maker must change its ways: https://www.insurancejournal.com/news/southeast/2018/12/07/511328.htm
  - CFPUA would like more PFAS studied: http://www.wect.com/video/2018/12/07/cfpua-would-like-more-pfas-studied/
- Dec 6
  - Water plan for GenX contamination gets preliminary approval: https://www.fayobserver.com/news/20181206/water-plan-for-genx-contamination-gets-preliminary-approval
  - GenX community meeting scheduled Tuesday: https://www.bladenjournal.com/news/21387/genx-community-meeting-scheduled-tuesday
- Dec 5
- Dec 4
  - Attorney says class action GenX lawsuit 'a good step': https://www.wect.com/2018/12/05/attorney-says-class-action-genx-lawsuit-good-step/
  - UNCW scientist, lawyer warn Wilmington residents have much to learn about GenX: https://www.starnewsonline.com/news/20181204/uncw-scientist-lawyer-warn-wilmington-residents-have-much-to-learn-about-genx
  - NCDEQ does all it plans to do on lower Cape Fear GenX contaminants: https://www.brunswickbeacon.com/content/ncdeq-does-all-it-plans-do-lower-cape-fear-genx-contaminants
  - Jobs, GenX among priorities for county board's new chairman: http://www.wilmingtonbiz.com/government/2018/12/04/jobs_genx_among_priorities_for_county_boards_new_chairman/18331
  - DEQ, secretary on proposed Chemours consent order: 'it's a very strong first step': https://www.wect.com/2018/12/05/deq-secretary-proposed-chemours-consent-order-its-very-strong-first-step/
  - If you don't like the DEQ deal with Chemours, stand up and say so: https://www.brunswickbeacon.com/content/if-you-don%E2%80%99t-deq-deal-chemours-stand-and-say-so
- Dec 3

    - Editorial: Chemours deal leaves Wilmington area out in the rain: https://www.starnewsonline.com/opinion/20181203/editorial-chemours-deal-leaves-wilmington-area-out-in-rain
- Dec 2
- Dec 1
- November 30
    - NC DEQ seeking public input on proposed settlement with Chemours: http://www.wunc.org/post/nc-deq-seeking-public-input-proposed-settlement-chemours#stream/0
    - River watch says its involvement ensured record NC fine for chemical maker: https://carolinapublicpress.org/28380/record-state-fine-for-chemical-company-came-only-with-environmental-group-at-the-table/
    - This week in pollution: a historic penalty against Chemours, plus more troubling science about PFAS: http://pulse.ncpolicywatch.org/2018/11/30/comment-on-historic-penalty-against-chemours-plus-more-troubling-science-about-pfas/

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Message

From: Liguori, Krista [liguori.krista@epa.gov]
Sent: 12/14/2018 6:02:55 PM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]
Subject: GenX News Updates Dec 7th through 14th

Hi all,

Here are the news updates for GenX from Dec 7th through Dec 14th:

PubMed/ Google Scholar
- None

Google News
- Dec 14
  - Riverkeeper, SELC defend GenX agreement: https://www.coastalreview.org/2018/12/riverkeeper-selc-defend-genx-agreement/
- Dec 13
  - GenX questions increasing: https://www.bladenjournal.com/news/21528/genx-questions-increasing
  - GenX: consent order is "a first step": http://www.whqr.org/post/genx-consent-order-first-step#stream/0
  - Don't sign Chemours consent order, residents tell DEQ: https://www.northcarolinahealthnews.org/2018/12/13/dont-sign-chemours-consent-order-residents-say/
- Dec 12
  - Cape Fear river watch defends consent order with DEQ, Chemours: https://www.starnewsonline.com/news/20181212/cape-fear-river-watch-defends-consent-order-with-deq-chemours
- Dec 11
  - New Hanover commissioners likely to oppose NCDEQ consent order with Chemours: https://www.wect.com/2018/12/11/new-hanover-commissioners-likely-oppose-ncdeq-consent-order-with-chemours/
  - Opinion: why we support Chemours consent order: https://www.starnewsonline.com/opinion/20181211/opinion-why-we-support-chemours-consent-order
  - Deal would require toxicity studies for 5 chemicals released at NC plant: https://carolinapublicpress.org/28397/deal-would-require-toxicity-studies-for-5-chemicals-released-at-nc-plant/
  - Neighbors, leaders share opposition to consent order as DEQ holds public meeting: https://www.wwaytv3.com/2018/12/11/neighbors-leaders-share-opposition-to-consent-order-as-deq-holds-public-meeeting/
  - Residents speak against GenX deal between Chemours, State and Environmental officials: https://www.fayobserver.com/news/20181211/residents-speak-against-genx-deal-between-chemours-state-and-environmental-officials
- Dec 10
- Dec 9
  - Editorial: our view: area deserves more answers on GenX deal: https://www.starnewsonline.com/opinion/20181209/editorial-our-view-area-deserves-more-answers-on-genx-deal

    - Opinion, Kathleen and James Pawlowski: Chemours deal is too early, woefully insufficient: https://www.starnewsonline.com/opinion/20181209/opinion-kathleen-and-james-pawlowski-chemours-deal-is-too-early-woefully-insufficient
- Dec 8
    - OP-ED: Ethical analysis of GenX: http://www.technicianonline.com/opinion/article_14956fe4-fb49-11e8-a99a-8f64f90d96a5.html
- Dec 7
    - Regan defends GenX order, says it could aid other lawsuits: https://www.starnewsonline.com/news/20181207/regan-defends-genx-order-says-it-could-aid-other-lawsuits
    - GenX: CFPUA responds to EPA's draft toxicity assessment: http://www.whqr.org/post/genx-cfpua-responds-epas-draft-toxicity-assessment#stream/0
    - Chemours eyes future wastewater discharge permit: https://www.fayobserver.com/news/20181207/chemours-eyes-future-wastewater-discharge-permit

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Message

From: Liguori, Krista [liguori.krista@epa.gov]
Sent: 12/21/2018 5:20:38 PM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]
Subject: GenX News Updates Dec 14th through 21st

Hi all,

Here are the news updates for GenX from Dec 14th through the 21st!

PubMed/ Google Scholar:
- None

Google News:
- Dec 21
  - EPA Regulatory Environmental Law News Update November 2018: https://www.natlawreview.com/article/epa-regulatory-environmental-law-news-update-november-2018
- Dec 20
  - CFPUA files motion to intervene in GenX lawsuit: http://www.wilmingtonbiz.com/more_news/2018/12/20/cfpua_files_motion_to_intervene_in_genx_lawsuit/18392
  - GenX levels in air decrease, officials say: https://www.fayobserver.com/news/20181220/genx-levels-in-air-decrease-officials-say
- Dec 19
  - Our View: water project makes progress: https://www.fayobserver.com/opinion/20181218/our-view-water-project-makes-progress
  - HB2, GenX, NC09 and deadly hurricanes part of Gov Roy Cooper's first two years: https://www.wect.com/2018/12/19/hb-genx-nc-deadly-hurricanes-part-gov-roy-coopers-first-two-years/
- Dec 18
  - New Hanover County Commissioners Pass Unanimous Consent Order Resolution: http://www.whqr.org/post/new-hanover-county-commissioners-pass-unanimous-consent-order-resolution#stream/0
  - Could a Trump administration proposal lead to more Wilmington development?: https://www.starnewsonline.com/news/20181218/could-trump-administration-proposal-lead-to-more-wilmington-development
- Dec 17
  - Water plan advances for wells contaminated with GenX: https://www.fayobserver.com/news/20181217/water-plan-advances-for-wells-contaminated-with-genx
- Dec 16
  - Editorial, Our View: The missing party in the Chemours consent order: https://www.starnewsonline.com/opinion/20181216/editorial-our-view-missing-party-in-chemours-consent-order
- Dec 15
- Dec 14
  - Riverkeeper, SELC defend GenX agreement: https://www.coastalreview.org/2018/12/riverkeeper-selc-defend-genx-agreement/

- Top stories No. 4: GenX actions take shape: http://www.wilmingtonbiz.com/more_news/2018/12/14/top_stories_no_4_genx_actions_take_shape/18362

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Message

From: Liguori, Krista [liguori.krista@epa.gov]
Sent: 11/30/2018 8:42:51 PM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]
Subject: GenX News Updates Nov 23rd through Nov 30th

Hi all,

Here are the news updates for GenX from November 23rd until Nov 30th:

Google Scholar / PubMed
- None

Google News
- Nov 30
- Nov 29
  - Billboards, one on NC 87, take aim at Chemours: https://www.bladenjournal.com/news/21212/billboards-one-on-n-c-87-take-aim-at-chemours
  - CFPUA asking more questions about Chemours consent order: https://www.starnewsonline.com/news/20181128/cfpua-asking-more-questions-about-chemours-consent-order
  - DEQ says Chemours order enough to help Cape Fear region with GenX problem: http://www.wect.com/2018/11/29/deq-says-chemours-order-enough-help-cape-fear-region-with-genx-problem/
  - Proposed consent order to reduce GenX: http://spectrumlocalnews.com/nc/coastal/news/2018/11/29/proposed-consent-order-to-reduce-genx
  - Will Chemours have to pay $12M to DEQ?: https://www.wwaytv3.com/2018/11/29/will-chemours-have-to-pay-12m-to-deq/
  - DEQ: Wilmington protected by previous actions against Chemours: https://www.starnewsonline.com/news/20181129/deq-wilmington-protected-by-previous-actions-against-chemours
  - GenX: DEQ explains the proposed consent order: http://www.whqr.org/post/genx-deq-explains-proposed-consent-order#stream/0
  - Chemours GenX cleanup means bottled water, drinking systems: https://www.fayobserver.com/article/20181129/NEWS/181128080
  - Chemours to drastically cut nonstick toxics at NC site: https://news.bloomberglaw.com/product-liability-and-toxics-law/chemours-cuts-to-toxic-emissions-at-nc-site-to-cost-millions
- Nov 28
  - Report: river's industrial chemicals come from plant, others: https://www.wwaytv3.com/2018/11/28/report-rivers-industrial-chemicals-come-from-plant-others/
- Nov 27
  - Teflon replacement on track to test definition of hazardous chemicals: https://www.treehugger.com/clean-water/teflon-replacement-track-test-definition-hazardous-chemicals.html
  - Chemours to clean up GenX and pay $12 million fine: https://cen.acs.org/environment/persistent-pollutants/Chemours-clean-GenX-pay-12/96/web/2018/11
  - DEQ, Chemours propose agreement to end state's GenX lawsuit: https://www.brunswickbeacon.com/content/deq-chemours-propose-agreement-end-state%E2%80%99s-genx-lawsuit
  - US EPA broadens scope of PFAS detection method: https://chemicalwatch.com/72344/us-epa-broadens-scope-of-pfas-detection-method

    - Sidley environmental trends: https://www.lexology.com/library/detail.aspx?g=72173161-6f98-4f1f-bb8f-15c763a8c5e0
    - Proposed North Carolina order requires Chemours to reduce GenX emissions, pay $12M fine: https://www.insurancejournal.com/news/southeast/2018/11/27/510087.htm
- Nov 26
    - Chemours to pay pollution settlement to North Carolina: https://www.delawarepublic.org/post/chemours-pay-pollution-settlement-north-carolina
    - CFPUA says proposed consent order doesn't address New Hanover Co. residents' drinking water concerns: https://www.wect.com/2018/11/26/cfpua-says-proposed-consent-order-doesnt-address-new-hanover-co-residents-drinking-water-concerns/
    - GenX: November was a busy month for water issues: http://www.whqr.org/post/genx-november-was-busy-month-water-issues#stream/0
    - Local leaders, lawyers react to GenX agreement: http://www.wilmingtonbiz.com/more_news/2018/11/26/local_leaders_lawyers_react_to_genx_agreement/18289
    - Chemours agrees to pay $13 million, cut pollution of Teflon-related chemical in NC: https://www.delawareonline.com/story/money/business/2018/11/26/chemours-agrees-pay-13-million-cut-pollution-teflon-related-chemical-north-carolina/2090734002/
    - Climate report divides (CHEMOURS HIT WITH $12M PENALTY): https://www.politico.com/newsletters/morning-energy/2018/11/26/climate-report-divides-426409
- Nov 25
- Nov 24
    - Our view: Chemours pact is first step on a long road: https://www.fayobserver.com/opinion/20181124/our-view-chemours-pact-is-first-step-on-long-road
    - Residents skeptical of consent agreement with Chemours: http://spectrumlocalnews.com/nc/triangle-sandhills/news/2018/11/25/residents-skeptical-of-consent-agreement-with-chemours
- Nov 23
    - Mixed reactions among Wilmington officials to GenX deal: https://www.starnewsonline.com/news/20181123/mixed-reactions-among-wilmington-officials-to-genx-deal
    - Chemours hit with largest DEQ fine: https://www.bladenjournal.com/news/21094/chemours-ordered-to-reduce-emissions-pay-fine
    - NC environmental chief: chemical maker must change its ways: https://www.wral.com/nc-environmental-chief-chemical-maker-must-change-its-ways/18015715/

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Message

From: Liguori, Krista [liguori.krista@epa.gov]
Sent: 10/26/2018 7:59:06 PM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]
Subject: GenX News Updates Oct 19-26

Hi all,

Here are this week's news updates on GenX for October 19th through 26th.

PubMed/Google Scholar
- None

Google News
- October 26
  - This Week in Pollution: Smithfield eligible for big bailout, could cover lagoons, plus a scientific squabble over GenX: https://pulse.ncpolicywatch.org/2018/10/26/this-week-in-pollution-for-friday-smithfield-eligible-for-big-bailout-a-scientific-squabble-over-genx/
- October 25
  - CFPUA hosting forums to seek input on GenX, PFAS treatment: https://www.wwaytv3.com/2018/10/25/cfpua-hosting-forums-to-seek-input-on-genx-pfas-treatment/
  - Election opinion (NC Senate): Peterson on addressing GenX: http://www.wilmingtonbiz.com/government/2018/10/25/election_opinion_nc_senate_peterson_on_addressing_genx/18163
  - North Carolina water quality becomes major campaign issue before midterms: https://thinkprogress.org/north-carolina-water-pollution-hurricane-florence-election-76a05b3d285c/
  - Health, Environment in NC forum planned: https://www.coastalreview.org/2018/10/health-environment-in-nc-forum-planned/
- October 24
  - Cumberland County commissioner candidates discuss GenX, jobs: https://www.fayobserver.com/news/20181024/cumberland-county-commissioner-candidates-discuss-genx-jobs
- October 23
  - GenX, affordable housing dominate discussion at Power Breakfast: https://www.wect.com/2018/10/23/genx-affordable-housing-dominate-discussion-power-breakfast/
  - Chemours building an emissions control facility: http://spectrumlocalnews.com/nc/triangle-sandhills/news/2018/10/23/chemours-building-an-emissions-control-facility
  - Chemours breaks ground on emissions facility: https://www.wwaytv3.com/2018/10/23/chemours-breaks-ground-on-emissions-facility/
  - Chemours breaks ground on new NC facility that it says will cut GenX emissions: https://www.cbs17.com/news/local-news/cumberland-county-news/chemours-breaks-ground-on-new-nc-facility-that-it-says-will-cut-genx-emissions/1545107143
  - Science board gives final OK to GenX report, leaves health goal unchanged: https://www.northcarolinahealthnews.org/2018/10/23/science-board-gives-final-ok-to-genx-report-leaves-health-goal-unchanged/
  - Local, state, and federal candidates state their cases: http://www.wilmingtonbiz.com/government/2018/10/23/local_state_and_federal_candidates_state_their_cases/18154
- October 22

    - DEQ Says Chemours is dumping sludge at Sampson County Landfill: http://spectrumlocalnews.com/nc/triangle-sandhills/news/2018/10/22/deq-says-chemours-is-dumping-sludge-at-sampson-county-landfill
    - NC science advisory board recommends levels of GenX for 'safe' human consumption: https://www.cbs17.com/news/investigators/answer-desk/nc-science-advisory-board-recommends-levels-of-genx-for-safe-human-consumption/1542178057
- October 21
- October 20
    - Opinion, Dr. Lee Ferguson: Legislature's visionary effort to safeguard drinking water: https://www.starnewsonline.com/opinion/20181020/opinion-dr-lee-ferguson-legislatures-visionary-effort-to-safeguard-drinking-water
    - Sludge from Chemours plant dumped in Sampson County landfill: https://www.fayobserver.com/news/20181020/sludge-from-chemours-plant-dumped-in-sampson-county-landfill
- October 19
    - This week in pollution: PFAS in drinking water, Atlantic Coast Pipeline's secret drilling fluids, plus hog farm odor complaints: https://pulse.ncpolicywatch.org/2018/10/19/this-week-in-pollution-pfas-in-drinking-water-atlantic-coast-pipelines-secret-drilling-fluids-plus-hog-farm-odor-complaints/
    - Opinion, William Norris: CFPUA taking necessary step for safe water: https://www.starnewsonline.com/opinion/20181019/opinion-william-norris-cfpua-taking-necessary-step-for-safe-water

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Message

From: Liguori, Krista [liguori.krista@epa.gov]
Sent: 11/16/2018 9:47:45 PM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]
Subject: GenX News Updates November 2nd - 9th

Hi all,

Congrats on publishing! I was out last week, so I combined the past two weeks of news. Here are the news updates for GenX from Nov 2nd through the 16th:

Google Scholar / PubMed

- Abstract from student researchers @ University of California (but no attached paper or publication available yet); Treatment of AFFF Contaminated Water Using Hydrated Electron: https://www.sccur.org/sccur/FALL_2018_CONFERENCE/ENGR_COMP_TALKS/15/

Google News

- Nov 16
  - EPA finds replacements for toxic 'Teflon' chemicals toxic: https://www.ecowatch.com/epa-finds-replacements-for-toxic-teflon-chemicals-toxic-2620083129.html
  - Some orgs criticize EPA's PFAS standard: https://www.cadillacnews.com/news/some-orgs-critcize-epa-s-pfas-standard/article_bed7e4f5-bfe1-5c96-8f9f-ba01455d6592.html
  - New compounds found in blood of those near Cape Fear river: http://www.wunc.org/post/new-compounds-found-blood-those-near-cape-fear-river#stream/0
- Nov 15
  - EPA releases 1st toxicity study on GenX: http://www.wect.com/video/2018/11/15/epa-releases-st-toxicity-study-genx/
  - EPA releases draft toxicological profiles for two PFASs: https://chemicalwatch.com/71998/epa-releases-draft-toxicological-profiles-for-two-pfass
  - EPA releases draft safe daily dose for Chemours's GenX chemical: https://cen.acs.org/environment/persistent-pollutants/EPA-releases-draft-safe-daily/96/i46
  - Health highlights: Nov 15, 2018 (Newer Nonstick Coating May Pose Health Threat: EPA): https://health.usnews.com/health-care/articles/2018-11-15/health-highlights-nov-15-2018
  - EPA report on GenX toxicity suggestive to cancer: http://spectrumlocalnews.com/nc/coastal/news/2018/11/15/epa-report-on-genx-toxicity-suggestive-to-cancer
  - Group says GenX replacement non-stick chemicals pose health risks: https://www.floridatoday.com/story/news/local/environment/2018/11/15/group-says-replacement-non-stick-chemical-poses-health-risks/2010096002/
  - NC: 'Little-to-no' research about new chemicals found by UNCW: https://www.starnewsonline.com/news/20181115/nc-little-to-no-research-about-new-chemicals-found-by-uncw
  - Update: public input sought on GenX toxicity: https://www.thenewscenter.tv/content/news/New-report-shows-GenX-not-found-in-treated-water--480872601.html
  - Blood tests show 4 PFAS, but no GenX: https://www.coastalreview.org/2018/11/blood-tests-show-4-pfas-but-no-genx/
  - CFPUA expects to reduce PFAS levels in drinking water by end of month: https://www.wect.com/2018/11/15/cfpua-expects-reduce-pfas-levels-drinking-water-by-end-month/
- Nov 14
  - EPA: GenX nearly as toxic as notorious non-stick chemicals it replaced: https://www.ewg.org/release/epa-genx-nearly-toxic-notorious-non-stick-chemicals-it-replaced

    - EPA seeks input on draft GenX guidelines: https://www.fayobserver.com/news/20181114/epa-seeks-input-on-draft-genx-guidelines
    - EPA releases first-ever toxicity assessments for GenX, related chemicals: http://www.wect.com/2018/11/15/epa-flags-new-fears-about-nonstick-coatings/
    - Tests show no GenX in blood but other chemicals present: http://spectrumlocalnews.com/nc/coastal/news/2018/11/14/tests-show-no-gen-x-in-blood-to-other-chemical-present
    - 'I was livid all over again': blood tests in GenX exposure study come back positive for PFAS: http://www.wect.com/2018/11/14/i-was-livid-all-over-again-blood-tests-genx-exposure-study-come-back-positive-pfas-pfoa-is-four-times-national-average/
    - Researchers find 4 new PFAS in Wilmington blood, no GenX: https://www.starnewsonline.com/news/20181114/researchers-find-4-new-pfas-in-wilmington-blood-no-genx
    - Tests show no GenX in blood but other chemicals present: http://spectrumlocalnews.com/nc/triangle-sandhills/news/2018/11/14/tests-show-no-gen-x-in-blood-to-other-chemical-present
    - Draft EPA study finds GenX may be harmful: https://www.wral.com/epa-flags-new-fears-about-nonstick-coatings/17995242/
- Nov 13
    - GenX study leads to more questions than answers: https://www.wwaytv3.com/2018/11/13/genx-study-leads-to-more-questions-than-answers/
    - Researchers: Blood samples don't detect GenX, but do find newly identified compounds: https://www.cbs17.com/news/north-carolina-news/researchers-blood-samples-don-t-detect-genx-but-do-find-newly-identified-compounds/1595692001
- Nov 12
    - Researchers to hold public meeting about GenX blood test results in New Hanover Co: http://www.wect.com/2018/11/12/researchers-hold-public-meeting-about-genx-blood-test-results-new-hanover-co/
    - Opinion: Environmental policy is more than just an added bonus: http://www.technicianonline.com/opinion/article_71ebb39e-e6e3-11e8-b3c4-87d32f1a904f.html
- Nov 11
    - Letters, Nov 11: reader says GenX in water is no problem: https://www.starnewsonline.com/opinion/20181111/letters-nov-11-reader-says-genx-in-water-is-no-problem
- Nov 10
- Nov 9
    - Brunswick seeks EPA loan fro H2O upgrades: https://www.coastalreview.org/2018/11/brunswick-seeks-epa-loan-for-h2o-upgrades/
- Nov 8
    - Higher rates of birth defects found in four southeastern countries; link to PFAS uncertain: http://pulse.ncpolicywatch.org/2018/11/08/higher-rates-of-birth-defects-found-in-four-southeastern-counties-link-to-pfas-uncertain/
    - CFPUA holding final community meeting about GenX, other PFAS: http://www.wect.com/2018/11/08/cfpua-holding-final-community-meeting-about-genx-other-pfas/
- Nov 7
    - Sen. Trudy Wade: her loss, shout it stand, could be a win for the environment: https://pulse.ncpolicywatch.org/2018/11/07/sen-trudy-wade-her-loss-should-it-stand-could-be-a-win-for-the-environment/
- Nov 6
- Nov 5
    - UNCW mass spectrometers "appear unscathed" after Florence, but GenX testing will be delayed: https://portcitydaily.com/local-news/2018/11/05/uncw-mass-spectrometers-appear-unscathed-after-florence-but-genx-testing-will-be-delayed/

    - Replacement chemicals raise new concerns: https://rapidcityjournal.com/news/local/replacement-chemicals-raise-new-concerns/article_5adcc367-e30f-5b0e-9e76-464a0535332f.html
- Nov 4
- Nov 3
- Nov 2

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Message

From: Liguori, Krista [liguori.krista@epa.gov]
Sent: 11/2/2018 7:18:29 PM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]
Subject: GenX News Updates for Oct 26 - Nov 2

Hi all,

Here are this week's news updates on GenX for October 26th through November 2nd.

PubMed/Google Scholar
- None

Google News
- November 2
  - PFAS contamination spurs university research collaboration: https://factor.niehs.nih.gov/2018/11/community-impact/pfas/index.htm
- November 1
- October 31
  - CFPUA expects to begin lowering GenX, other contaminant levels within a month: https://portcitydaily.com/local-news/2018/10/31/cfpua-expects-to-begin-lowering-genx-other-contaminant-levels-within-a-month/
  - Quincy water system clear of any PFAS contamination: https://wtvbam.com/news/articles/2018/oct/31/quincy-water-system-clear-of-any-pfas-contamination/
- October 30
- October 29
  - Science board gives final OK to GenX report: https://www.coastalreview.org/2018/10/science-board-gives-final-ok-to-genx-report/
  - Scientist says GenX legislation based on his work is good start, but limited by lobbyists: https://portcitydaily.com/local-news/2018/10/29/scientist-says-genx-legislation-based-on-his-work-is-good-start-but-limited-by-lobbyists/
- October 28
  - Letters, Oct 28: Legislature's water safety act comes up short: https://www.starnewsonline.com/opinion/20181028/letters-oct-28-legislatures-water-safety-act-comes-up-short
- October 27
  - Opinion: Water woes require action, not just research: https://www.starnewsonline.com/opinion/20181027/opinion-water-woes-require-action-not-just-research
- October 26

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Message

From: Liguori, Krista [liguori.krista@epa.gov]
Sent: 3/23/2018 5:03:51 PM
To: Strong, Jamie [Strong.Jamie@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]
Subject: GenX News Updates Week March 23rd

Hi all,

PubMed Updates March 17-23rd

1. Didn't find anything ☺

News Updates March 17-23rd

1. "Science Board to Examine GenX health Standard" Journal Now, March 17
   a. http://www.journalnow.com/news/state_region/science-board-to-examine-genx-health-standard/article_0fbd54de-5541-5194-91a0-dbd644aee746.html
2. "Engineers: reverse osmosis 'best' treatment for filtering out GenX, Nafion byproducts" WECT, March 19
   a. http://www.wect.com/story/37757204/engineers-reverse-osmosis-best-treatment-for-filtering-out-genx-nafion-byproducts
3. "EPA could have GenX Health goal by summer's end" StarNews Online, March 19
   a. http://www.starnewsonline.com/news/20180319/epa-could-have-genx-health-goal-by-summers-end
4. "State may test vegetable gardens near Chemours plant for GenX" The Fayetteville Observer, March 19
   a. http://www.fayobserver.com/news/20180319/state-may-test-vegetable-gardens-near-chemours-plant-for-genx
5. "Brunswick County commissioners hope to send message to Chemours, NCDEQ" WECT, March 19
   a. http://www.wect.com/story/37761522/brunswick-county-commissioners-hope-to-send-message-to-chemours-ncdeq
6. "NC may test food near Chemours plant for industrial chemical" News & Record, March 19
   a. https://news.us.org/item/120125_nc-may-test-food-near-chemours-plant-for-industrial-chemical
7. "DEQ to test Fish, possibly Vegetables, for GenX" North Carolina Public Radio, WUNC. March 20
   a. http://wunc.org/post/deq-test-fish-possibly-vegetables-genx#stream/0
8. "North Carolina to test Vegetables for GenX" Fresh Plaza, March 22
   a. http://www.freshplaza.com/article/191526/North-Carolina-to-test-vegetables-for-GenX
9. "State to Step Up Rainwater Measurements on GenX" WRAL.com, March 22
   a. http://www.wral.com/state-to-step-up-rainwater-measurements-on-genx/17435695/
10. "DEQ Secretary Makes Case for Additional GenX Funding" Star News Online, March 22
    a. http://www.starnewsonline.com/news/20180322/deq-secretary-makes-case-for-additional-genx-funding
11. "Low Levels of Perfluorinated Compounds Detected in Durham Drinking Water; New Statewide Monitoring System Proposed" NC Policy Watch, March 23
    a. http://pulse.ncpolicywatch.org/2018/03/23/low-levels-of-perfluorinated-compounds-detected-in-durham-drinking-water-new-statewide-monitoring-system-proposed/#sthash.7OKS2yZV.dpbs
12. **"Chemours 'surprised' by Pollution Violation Notice, Will Implement Costly Cleanup"** Delaware Online. March 23
    a. https://www.delawareonline.com/story/money/business/2018/03/22/chemours-surprised-pollution-violation-notice-implement-costly-cleanup/448647002/

Have a good weekend!

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Message

From: Liguori, Krista [liguori.krista@epa.gov]
Sent: 3/30/2018 6:53:41 PM
To: Strong, Jamie [Strong.Jamie@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]
Subject: GenX News Updates Week March 30th
Attachments: 1-s2.0-S0021967318303625-main.pdf

Hi All,

Here are your updates for the week!

PubMed Updates:

- March 22nd – "Whats in the Water? How Media Coverage of Corporate GenX Pollution Shapes Local Understanding of Risk?" Critical Criminology
  - https://link.springer.com/article/10.1007/s10612-018-9389-8
  - Not a scientific study, but some of you might find this an interesting read about "Green Crime" and distribution of blame ☺
- March 23rd – "Validation of quantitative measurements and semi-quantitative estimates of emerging perfluoroethercarboxylic acids (PFECAs) and hexfluoroprolyene oxide acids (HFPOAs)" James McCord, Seth Newton, Mark Strynar. Journal of Chromatography A. [Attached PDF]
  - https://www.sciencedirect.com/science/article/pii/S0021967318303625

Google News Updates March 24th-30th:

- March 25th – "Secrets, Denials, and Toxic Water: C8 in the Ohio River Valley" The Fayetteville Observer
  - http://www.fayobserver.com/news/20180325/secrets-denials-and-toxic-water-c8-in-ohio-river-valley
- March 26th – "GenX: CFPUA Sends Final HB 56 Report to Raleigh" WHQR
  - http://whqr.org/post/genx-cfpua-sends-final-hb-56-report-raleigh#stream/0
  - "The Cape Fear Public Utility Authority has submitted its final report to the Environmental Review Commission, per the requirements of House Bill 56. That legislation appropriated funds to CFPUA and the University of North Carolina Wilmington to study which treatment techniques would remove GenX and other contaminants from the public water supply."
  - "The report says granular activated carbon filter media and ion exchange resin are currently in pilot scale testing."
  - "The report also says that GenX represents a small percentage of the 20 different per-fluorinated, unregulated compounds discovered through testing.."
- March 26th – "Public Learns of Cape Fear River Toxins, 11 year later" The Fayetteville Observer
  - http://www.fayobserver.com/news/20180326/public-learns-of-cape-fear-river-toxins-11-years-later
- March 27th – "For those Exposed to GenX, an Agonizing Wait for Answers" – The Fayetteville Observer
  - http://www.fayobserver.com/news/20180327/for-those-exposed-to-genx-agonizing-wait-for-answers
- March 27th – "Wilmington Native Behind New GenX Documentary" WECT-TV6
  - http://www.wect.com/story/37821462/wilmington-native-behind-new-genx-documentary
- March 28th – "Live Wire: How much GenX is in the PWC drinking water? Have any citizens who wells test positive for GenX been physically tested for their levels of GenX?" The Fayetteville Observer
  - http://www.fayobserver.com/news/20180328/live-wire-how-much-genx-is-in-pwc-drinking-water-have-any-citizens-whose-wells-tested-positive-for-genx-been-physically-tested-for-their-levels-of-genx

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Message

From: Liguori, Krista [liguori.krista@epa.gov]
Sent: 4/16/2018 12:12:59 PM
To: Strong, Jamie [Strong.Jamie@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]
Subject: GenX Updates Week April 13th

Hi all,

Here's this weeks updates on GenX!

PubMed & Google Scholar April 6-13:

1. Sheng, et al., 2018 - Cytotoxicity of novel fluorinated alternatives to long-chain perfluoroalkyl substances to human liver cell line and their binding capacity to human liver fatty acid binding protein
    a. https://link.springer.com/article/10.1007%2Fs00204-017-2055-1
2. Cui et al., 2018 – Occurrence and Tissue Distribution of Novel Perfluoroether Carboxylic and Sulfonic Acids and Legacy Per/Polyfluoroalkyl Substances in Black-Spotted Frog (Pelophylax nigromaculatus)
    a. https://pubs.acs.org/doi/abs/10.1021/acs.est.7b03662

Google News April 6-13:

1. Cooper Seeking $14.5M in State Budget to Address GenX – WRAL.com – April 10th
    a. http://www.wral.com/cooper-seeking-14-5m-in-state-budget-to-address-genx/17477015/
2. Cooper Calls for more Funds to Address GenX – April 11th
    a. http://www.fayobserver.com/news/20180411/cooper-calls-for-more-funds-to-address-genx
3. NC Policy Collaboratory to Fund GenX Researcher – April 12th – The Hill
    a. http://chapelboro.com/news/unc/nc-policy-collaboratory-fund-genx-research
4. Tuesday Talks.. GenX: What Do we Know Now? – April 12th – StarNews Online
    a. http://www.starnewsonline.com/news/20180412/tuesday-talks--genx-what-do-we-know-now
5. DEQ asks judge to stop Chemours from Discharging all GenX-related compounds, says company internationally misled regulators – April 9th – The Progessive Pulse
    a. https://pulse.ncpolicywatch.org/2018/04/09/deq-asks-judge-to-stop-chemours-from-discharging-all-genx-related-compounds-says-company-intentionally-misled-regulators/
6. NC puts Chemours on notice over GenX air emissions – April 9th – Triangle Business Journal
    a. https://www.bizjournals.com/triangle/news/2018/04/09/nc-puts-chemours-on-notice-over-genx-air-emissions.html
7. North Carolina policy collaborator grants will support GenX research and other emerging environmental contaminants in North Carolina – April 9th – UNC Chapel Hill
    a. https://uncnews.unc.edu/2018/04/09/north-carolina-policy-collaboratory-grants-will-support-genx-research-and-other-emerging-environmental-contaminants-in-north-carolina/
8. Chemours emitted nearly 40 times GenX-related compounds into the air than company reported; DEQ issues notice – April 6th – The Progressive Pulse
    a. https://pulse.ncpolicywatch.org/2018/04/06/chemours-emitted-nearly-40-times-genx-related-compounds-into-the-air-than-company-reported-deq-issues-notice/
9. Levels of GenX remain in single digits in latest Brunswick Co. water tests – April 11th – WECT 6
    a. http://www.wect.com/story/37934415/levels-of-genx-remain-in-single-digits-in-latest-brunswick-co-water-tests
10. North Carolina Agency says Chemours Lied about Discharging GenX – April 10th – WWAY3
    a. https://www.wwaytv3.com/2018/04/10/north-carolina-agency-says-chemours-lied-about-discharging-genx/
11. N.C. Regulators to Chemours: Keep GenX air Emissions out of Groundwater – April 7th – Winston-Salem Journal

a. http://www.journalnow.com/news/state_region/n-c-regulators-to-chemours-keep-genx-air-emissions-out/article_f1c9e100-a578-52c5-94b6-2d8cb9b685e7.html

12. Governor Issues Budget Plan to Address Testing for GenX – April 10th – The Brunswick Beacon
    a. http://www.brunswickbeacon.com/content/governor-issues-budget-plan-address-testing-genx
13. Our View: GenX Pollution Shows how Deregulation can Kill us – April 7th – The Fayetteville Observer
    a. http://www.fayobserver.com/opinion/20180407/our-view-genx-pollution-shows-how-deregulation-can-kill-us
14. More Compounds Discovered in Wells near Chemours – April 12th – The Fayetteville Observer
    a. http://www.fayobserver.com/news/20180412/more-compounds-discovered-in-wells-near-chemours
15. DEQ Develops Case to Halt GenX Emissions – April 13th – Coastal Review Online
    a. https://www.coastalreview.org/2018/04/deq-develops-case-to-halt-genx-emissions/
16. What Others Say: DEQ gets tougher on GenX but needs more help – April 12th – The Sanford Herald
    a. http://www.sanfordherald.com/opinion/editorials/what-others-say-deq-gets-tougher-on-genx-but-needs/article_277758aa-3e81-11e8-934e-276b276b985f.html
17. North Carolina Regulators seek Court Order Against Chemour's fluoroether pollution – April 11th – Chemical & Engineering News
    a. https://cen.acs.org/environment/pollution/North-Carolina-regulators-seek-court/96/i16
18. North Carolina cracks down on Chemour's fluoroether air pollution – April 9th – Chemical & Engineering News
    a. https://cen.acs.org/articles/96/web/2018/04/North-Carolina-cracks-down-Chemourss.html

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Message

From: Liguori, Krista [liguori.krista@epa.gov]
Sent: 4/23/2018 1:23:39 PM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]
Subject: GenX Updates Week April 20th

Hi all,

Here's last weeks updates on GenX!

PubMed & Google Scholar April 14-20:

1. no updates

Google News April 14-20:

2. In Case of GenX – Wilmington Biz – April 20
   a. http://www.wilmingtonbiz.com/more_news/2018/04/20/in_case_of_genx/17374
3. GenX Found in Robeson Water System, Swamp – The Fayetteville Observer – April 20
   a. http://www.fayobserver.com/news/20180420/genx-found-in-robeson-water-system-swamp
4. GenX in Homes: 300 Join Health Effects Study – Coastal Review Online – April 20
   a. https://www.coastalreview.org/2018/04/genx-in-homes-300-join-health-effects-study/
5. GenX Found at Unsafe Levels in County Well - The Robesonian – April 20
   a. https://www.robesonian.com/news/110161/genx-found-at-unsafe-levels-in-county-well
6. GenX Level in Robeson County Well exceeds safe Drinking Standards, Official says – WMBF news – April 20
   a. http://www.wmbfnews.com/story/38004676/genx-level-in-robeson-county-well-exceeds-safe-drinking-standards-official-says
7. N.C. State Researchers find GenX, other Chemicals in Tap Water – StarNews Online – April 19
   a. http://www.starnewsonline.com/news/20180417/nc-state-researchers-find-genx-other-chemicals-in-tap-water
8. Report says Incidents of GenX, other PFAS, nearly Doubled in Last Year – StarNews Online – April 18
   a. http://www.starnewsonline.com/news/20180418/report-says-incidents-of-genx-other-pfas-nearly-doubled-in-last-year
9. Tim White: Bad to worse: Its not just GenX Anymore – The Fayetteville Observer – April 14
   a. http://www.fayobserver.com/opinion/20180414/tim-white-bad-to-worse-its-not-just-genx-anymore
10. Fast and Loose: Plaintiffs Respond to Motion to Dismiss GenX Case – Triangle Business Journal – April 16
    a. https://www.bizjournals.com/triangle/news/2018/04/16/fast-and-loose-plaintiffs-respond-to-motion-to.html
11. High Concentrations of Fluorinated Chemical GenX found in Watershed – Phys Org – April 17
    a. https://phys.org/news/2018-04-high-fluorinated-chemical-genx-watershed.html
12. Editorial: GenX Action Must now Come from Voters – Fayetteville Observer – April 15
    a. http://www.starnewsonline.com/opinion/20180415/editorial-fayetteville-observer-genx-action-must-now-come-from-voters

Best,

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Message

From: Liguori, Krista [liguori.krista@epa.gov]
Sent: 4/27/2018 4:29:57 PM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]
Subject: GenX News Updates April 27th

Hi guys!

Here are this week's news updates on GenX ☺

PubMed & Google Scholar

1. Risk Assessment of GenX and PFOA in Vegetable Garden Crops in Dordrecht, Papdenrecht, and Sliedrecht
    a. Translated to English (originally in.. dutch??)
    b. http://rivm.openrepository.com/rivm/handle/10029/621785
    c. https://www.rivm.nl/bibliotheek/rapporten/2018-0017.html
    d. Mengelers M; te Biesebeek JD; Schipper M; Slob W; Boon PE – 2018
2. Fluoroethers Taint Sediments, Pollution
    a. Cheryl Hogue – 2018
    b. https://pubs.acs.org/doi/full/10.1021/cen-09615-polcon2
3. Validation of quantitative measurements and semi-quantitative estimates of emerging perfluoroethercarboxylic acids (PFECAs) and hexfluoroprolyene oxide acids (HFPOAs).
    a. McCord J, Newton S, Strynar M
    b. https://www.ncbi.nlm.nih.gov/pubmed/29628221
    c. May 25, 2018

Google News April 21 – April 27

1. States are doing what scott Pruitt won't – NY Times – April 21, 2018
    a. https://www.nytimes.com/2018/04/21/opinion/sunday/states-are-doing-what-scott-pruitt-wont.html
2. GenX: two studies show growth of contaminated water areas – HQR News – April 23, 2018
    a. http://whqr.org/post/genx-two-studies-show-growth-contaminated-water-areas#stream/0
3. GenX-related fluoroether taints water in wells near West Virginia Chemours plant – Pollution – April 24, 2018
4. EPA: Filters appear effective for GenX in water – Winston-Salem Journal, April 25, 2018
    a. http://www.journalnow.com/news/state_region/epa-filters-appear-effective-for-genx-in-water/article_aa02ece3-33f9-512b-a284-84c8eee67a9a.html
5. New report shows GenX not found in treated water in wells in West Virginia, Ohio – The News Center, April 25, 2018
    a. http://www.thenewscenter.tv/content/news/New-report-shows-GenX-not-found-in-treated-water--480872601.html
6. EPA says GenX not present in treated water in West Virginia, Ohio – WV public – April 25, 2018
    a. http://wvpublic.org/post/epa-says-genx-not-present-treated-water-west-virginia-ohio#stream/0
7. Chemical not found in treated water in West Virginia, Ohio – WHSV – April 25, 2018
    a. http://www.whsv.com/content/news/Chemical-not-found-in-treated-water-in-West-Virginia-Ohio-480864641.html
8. What will GenX health studies reveal? – Coastal Review Online – April 25, 2018
    a. https://www.coastalreview.org/2018/04/what-will-genx-health-studies-reveal/
9. Hurdles to testing food for GenX – North Carolina Health news – April 25, 2018
    a. https://www.northcarolinahealthnews.org/2018/04/25/hurdles-to-testing-food-for-genx/
10. UNCW says it has "no agenda" on GenX research – Star News Online – April 26, 2018
    a. http://www.starnewsonline.com/news/20180426/uncw-says-it-has-no-agenda-on-genx-research
11. Water exec: uncertain mix of chemicals from consumer taps – WRAL.com – April 26,2018
    a. https://www.wral.com/water-exec-uncertain-mix-of-chemicals-from-consumer-taps/17513255/

12. GenX not detected in treated water – The Marietta Times – April 27, 2018
    a. http://www.mariettatimes.com/news/2018/04/genx-not-detected-in-treated-water/

Have a good weekend!

Krista Liguori, MSPH
ORISE Participant
US Environmental Protection Agency
Office of Water, Office of Science and Technology
Health and Ecological Criteria Division | Human Health Risk Assessment Branch

Appointment

From: Behl, Betsy [Behl.Betsy@epa.gov]
Sent: 11/1/2021 1:49:39 PM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Euling, Susan [Euling.Susan@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]

Subject: organizing the GenX outreach briefings
Location: Microsoft Teams Meeting

Start: 11/1/2021 6:30:00 PM
End: 11/1/2021 7:00:00 PM
Show Time As: Busy

Required Attendees: Euling, Susan; Brittany Jacobs; Miller, GregoryG

1) Ex. 5 Deliberative Process (DP)

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Appointment

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 11/1/2021 1:37:49 PM
To: Euling, Susan [Euling.Susan@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]

Subject: GenX slide run through
Location: Microsoft Teams Meeting

Start: 11/1/2021 6:00:00 PM
End: 11/1/2021 6:30:00 PM
Show Time As: Busy

Required Attendees: Jacobs, Brittany

Thanks for your help – I can get up to speed by running through the briefing slides and having you ask me a couple of hard questions.

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From: Behl, Betsy [Behl.Betsy@epa.gov]
Sent: 10/26/2021 12:15:24 PM
To: Behl, Betsy [Behl.Betsy@epa.gov]; svia@awwa.org; matt@nrwa.org; nohle@rcap.org; Euling, Susan [Euling.Susan@epa.gov]; Jennifer Palmiotto [jennifer@nrwa.org]; keegan@nrwa.org; vandehei@amwa.net; Burneson, Eric [Burneson.Eric@epa.gov]; Rodgers-Jenkins, Crystal [Rodgers-Jenkins.Crystal@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; jadler@acwa-us.org; janastasio@acwa-us.org
CC: Chris Moody [CMoody@awwa.org]; Miller, GregoryG [Miller.Gregory@epa.gov]; Klasen, Matthew [Klasen.Matthew@epa.gov]; Sarah Buck [sbuck@rcap.org]

Subject: Final toxicity assessment for GenX chemicals
Location: Microsoft Teams Meeting

Start: 11/2/2021 6:30:00 PM
End: 11/2/2021 7:30:00 PM
Show Time As: Busy

Required Attendees: svia@awwa.org; matt@nrwa.org; nohle@rcap.org; Euling, Susan; Jennifer Palmiotto; keegan@nrwa.org; vandehei@amwa.net; Burneson, Eric; Rodgers-Jenkins, Crystal; Jacobs, Brittany; jadler@acwa-us.org; janastasio@acwa-us.org
Optional Attendees: Chris Moody; Sarah Buck; Miller, GregoryG; Klasen, Matthew

The U.S. Environmental Protection Agency (EPA) will release shortly the final human health toxicity assessment for Hexafluoropropylene Oxide (HFPO) Dimer Acid and its Ammonium Salt (referred to as "GenX chemicals"). The finalization of the assessment fulfills/constitutes/is part of EPA's efforts to increase the amount of information that is publicly available on chemicals in the PFAS class. A toxicity assessment is a written summary of the potential health effects associated with a chemical and is similar to assessments developed under EPA's Integrated Risk Information System (IRIS). The assessment provides hazard identification, dose-response information, and derives toxicity values called oral reference doses (RfDs) for chronic and subchronic exposures. EPA plans to use this toxicity assessment and information on exposure, analytical methods and treatment to develop a Drinking Water Health Advisory in the spring of 2022.

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From: Akhter, Shamima [Akhter.Shamima@epa.gov]
Sent: 10/26/2021 5:48:47 PM
To: Akhter, Shamima [Akhter.Shamima@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]; Euling, Susan [Euling.Susan@epa.gov]; Flaherty, Colleen [Flaherty.Colleen@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]
CC: Rodgers-Jenkins, Crystal [Rodgers-Jenkins.Crystal@epa.gov]; Burneson, Eric [Burneson.Eric@epa.gov]

Subject: FSTRAC Webinar on EPA's Final Human Health Toxicity Values for GenX Chemicals

Start: 11/4/2021 4:45:00 PM
End: 11/4/2021 6:00:00 PM
Show Time As: Busy

Recurrence: (none)

Required Attendees: Jacobs, Brittany; Miller, GregoryG; Euling, Susan; Flaherty, Colleen; Behl, Betsy
Optional Attendees: Rodgers-Jenkins, Crystal; Burneson, Eric

Agenda for FSTRAC Webinar Scheduled for Thursday, November 4, 2022, from 1:00 – 2:00 p.m., Eastern time

- Welcome and Introduction
- Recent release of EPA's final Toxicity Assessment for GenX Chemicals - Brittany Jacobs, Ph.D., OW/EPA

On October 25th, the U.S. Environmental Protection Agency (EPA) released the final human health toxicity assessment for Hexafluoropropylene Oxide (HFPO) Dimer Acid and its Ammonium Salt (referred to as "GenX chemicals"). The final GenX chemicals assessment is part of EPA's efforts to increase the amount of information that is publicly available on chemicals in the PFAS class noted in EPA's Strategic Roadmap to address per- and polyfluoroalkyl substances (PFAS). The assessment presents a critical review of the available human health effects information on GenX chemicals. The assessment provides hazard identification, dose-response information, and derives toxicity values called oral reference doses (RfDs) for chronic and subchronic exposures. A toxicity assessment is a written summary of the potential health effects associated with a chemical and is similar to assessments developed under EPA's Integrated Risk Information System (IRIS). EPA plans to use this toxicity assessment and information on exposure, analytical methods and treatment to develop a Drinking Water Health Advisory in the spring of 2022. Link to the assessment: https://www.epa.gov/chemical-research/human-health-toxicity-assessments-genx-chemicals

Please use the instructions below to join the FSTRAC Webinar

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1. **To join on your computer or mobile app, please click on the following link through your Outlook Invitation:**

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Then, click on "Open your Teams app" or "Continue on this browser" to join.

2. **If you are unable to reach the Teams meeting by clicking on the link above**, please copy and paste the following url into your browser and press return on your keyboard:

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From: Matthews, Lisa [Matthews.Lisa@epa.gov]
Sent: 10/25/2021 1:46:57 PM
To: Matthews, Lisa [Matthews.Lisa@epa.gov]; EPA ECOS ASTHO Bimonthly PFAS Call [EPA_ECOS_ASTHO_Bimonthly_PFAS_Call@epa.gov]; Buerk, Emma [Buerk.Emma@epa.gov]; Hanley, Adrian [Hanley.Adrian@epa.gov]; Tom Phillips [tom.phillips@maryland.gov]; robert.murphy@state.co.us; Smith, Brian [Smith.Brian@epa.gov]; Euling, Susan [Euling.Susan@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Burneson, Eric [Burneson.Eric@epa.gov]; Boucher, Aimee [Boucher.Aimee@epa.gov]; Aaron.Mealy@dnr.mo.gov

Subject: PFAS Science Call with ECOS and ASTHO
Attachments: Agenda_October 25 PFAS call.pdf; Watkins_EPA PFAS Strategic Roadmap.pdf; Hanley_Draft EPA Method 1633.pdf; BehL_Release of final toxicity assessment for GenX chemicals.pdf
Location: Microsoft Teams Meeting

Start: 10/25/2021 8:00:00 PM
End: 10/25/2021 9:15:00 PM
Show Time As: Busy

Required Attendees: EPA ECOS ASTHO Bimonthly PFAS Call; Buerk, Emma; Hanley, Adrian; Tom Phillips -MDA-; robert.murphy@state.co.us; Smith, Brian; Euling, Susan; Jacobs, Brittany; Burneson, Eric; Boucher, Aimee; Aaron.Mealy@dnr.mo.gov

Attached are the agenda and presentations for today's call. Please note that the call has been extended until 5:15 pm.

EPA's Office of Research and Development (ORD) hosts a bimonthly call with ECOS and ASTHO members and staff on PFAS science. These calls are an opportunity for EPA scientists and our state partners to share science and technical information related to PFAS. Topics include analytical methods, human health and toxicity, site characterization, exposure and remediation, and treatment. If you would like to present on an upcoming call, please contact Lisa Matthews. If you would like to be added to the email distribution list for these calls, please send requests to Erin McCabe.

Lisa Matthews
Senior Advisor and State Liaison
US EPA Office of Research and Development
202-564-6669

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From: Behl, Betsy [Behl.Betsy@epa.gov]
Sent: 11/1/2021 6:10:38 PM
To: Behl, Betsy [Behl.Betsy@epa.gov]; ScottL@astswmo.org; DaniaR@astswmo.org; Euling, Susan [Euling.Susan@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]; Rodgers-Jenkins, Crystal [Rodgers-Jenkins.Crystal@epa.gov]; Burneson, Eric [Burneson.Eric@epa.gov]
CC: Charles Reyes [CharlesR@astswmo.org]; Albert, Ryan [Albert.Ryan@epa.gov]

Subject: Final toxicity value for GenX chemicals (a PFAS chemical): Briefing to ASTSWMO
Location: Microsoft Teams Meeting

Start: 11/4/2021 2:00:00 PM
End: 11/4/2021 3:00:00 PM
Show Time As: Busy

Required Attendees: Behl, Betsy; ScottL@astswmo.org; DaniaR@astswmo.org; Euling, Susan; Jacobs, Brittany; Miller, GregoryG; Rodgers-Jenkins, Crystal; Burneson, Eric
Optional Attendees: Charles Reyes; Albert, Ryan

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From: Behl, Betsy [Behl.Betsy@epa.gov]
Sent: 6/21/2018 1:00:18 PM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Lowit, Anna [Lowit.Anna@epa.gov]; Laessig, Susan [Laessig.Susan@epa.gov]; Hamernik, Karen [Hamernik.Karen@epa.gov]; Raffaele, Kathleen [raffaele.kathleen@epa.gov]; Murphy, Deirdre [Murphy.Deirdre@epa.gov]; Vasu, Amy [Vasu.Amy@epa.gov]; Hoyer, Marion [hoyer.marion@epa.gov]; Axelrad, Daniel [Axelrad.Daniel@epa.gov]; Dzubow, Rebecca [Dzubow.Rebecca@epa.gov]; Euling, Susan [Euling.Susan@epa.gov]; Flowers, Lynn [Flowers.Lynn@epa.gov]; Doa, Maria [Doa.Maria@epa.gov]; Cassidy, Meghan [Cassidy.Meghan@epa.gov]; Olsen, Marian [Olsen.Marian@epa.gov]; Gehlhaus, Martin [Gehlhaus.Martin@epa.gov]; Pollard, Solomon [Pollard.Solomon@epa.gov]; Adams, Glenn [Adams.Glenn@epa.gov]; Mangino, Mario [mangino.mario@epa.gov]; Milburn, Anna [Milburn.Anna@epa.gov]; Schumacher, Kelly [Schumacher.Kelly@epa.gov]; Benson, Bob [Benson.Bob@epa.gov]; Hiatt, Gerald [Hiatt.Gerald@epa.gov]; Kissinger, Lon [Kissinger.Lon@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]
CC: Maddaloni, Mark [Maddaloni.Mark@epa.gov]; rogers, rick [rogers.rick@epa.gov]; Allenbach, Becky [Allenbach.Becky@epa.gov]; Harris, Kimberly [harris.kimberly@epa.gov]; Morton, Michael [Morton.Michael@epa.gov]; Shields, Amy [Shields.Amy@epa.gov]; Bahrman, Sarah [Bahrman.Sarah@epa.gov]; Small, Matthew [Small.Matthew@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; Bahadori, Tina [Bahadori.Tina@epa.gov]; Jones, Samantha [Jones.Samantha@epa.gov]; Weber, Robert [Weber.Robert@epa.gov]; Kidwell, JessicaL [Kidwell.JessicaL@epa.gov]; Bennett, James [bennett.james@epa.gov]; Reinhart, Roger [Reinhart.Roger@epa.gov]; Rowsey, Kevin [rowsey.kevin@epa.gov]; Konfirst, Matthew [konfirst.matthew@epa.gov]; Caporale, Cynthia [Caporale.Cynthia@epa.gov]; Bachman, Brenda [bachman.brenda@epa.gov]; Gettle, Jeaneanne [Gettle.Jeaneanne@epa.gov]; Walker, Mary [walker.mary@epa.gov]; Jones, Aaryn [Jones.Aaryn@epa.gov]; Hall, Renea [Hall.Renea@epa.gov]; Shell, Karrie-Jo [Shell.Karrie-Jo@epa.gov]; Davis, Molly [Davis.Molly@epa.gov]; Mitchell, Ken [Mitchell.Ken@epa.gov]; Kemker, Carol [Kemker.Carol@epa.gov]; Jones-Johnson, Shea [Jones-Johnson.Shea@epa.gov]

Subject: Discussion of EPA intra-agency comments on GenX Chemicals Toxicity Value Assessment CALL-IN: Ex. 6 Personal Privacy (PP) code: Ex. 6 Personal Privacy (PP)
Location: DCRoomWest5231M/DC-CCW-OST

Start: 6/28/2018 6:00:00 PM
End: 6/28/2018 7:00:00 PM
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Required Attendees: Miller, Gregory; Lowit, Anna; Laessig, Susan; Hamernik, Karen; Raffaele, Kathleen; Murphy, Deirdre; Vasu, Amy; Hoyer, Marion; Axelrad, Daniel; Dzubow, Rebecca; Euling, Susan; Flowers, Lynn; Doa, Maria; Cassidy, Meghan; Olsen, Marian; Gehlhaus, Martin; Pollard, Solomon; Adams, Glenn; Mangino, Mario; Milburn, Anna; Schumacher, Kelly; Benson, Bob; Hiatt, Gerald; Kissinger, Lon; Strong, Jamie; Jacobs, Brittany
Optional Attendees: Maddaloni, Mark; rogers, rick; Allenbach, Becky; Harris, Kimberly; Morton, Michael; Shields, Amy; Bahrman, Sarah; Small, Matthew; Anderson-Carnahan, Linda; Bahadori, Tina; Jones, Samantha; Weber, Robert; Kidwell, JessicaL; Bennett, James; Reinhart, Roger; Rowsey, Kevin; Konfirst, Matthew; Caporale, Cynthia; Bachman, Brenda; Gettle, Jeaneanne; Walker, Mary; Jones, Aaryn; Hall, Renea; Shell, Karrie-Jo; Davis, Molly; Mitchell, Ken; Kemker, Carol; Jones-Johnson, Shea

Join by Phone
Toll number: Ex. 6 Personal Privacy (PP) onference ID/access code: Ex. 6 Personal Privacy (PP)

Thank you all for providing excellent comments and feedback on the GenX chemicals toxicity assessment. We appreciate your thoughtful comments and carefully considered all your comments as well as interagency comments in our revisions to the document. The purpose of this call is to discuss the range/types of comments received and how we addressed them. We plan to send the GenX chemicals assessment out for peer review on June 22nd, in order to meet our aggressive schedule. We appreciate your understanding and look forward to our discussion.

This invite is being sent to the Agency Review Contacts listed below. Please feel free to include others we may have overlooked. Thank you!

Agency Review Contacts
Office of Water Greg Miller
Office of Chemical Safety and Pollution Prevention
- **Office of Pesticide Programs** Anna Lowit
- **Office of Pollution Prevention and Toxics** Susan Laessig
- **Office of Science Coordination and Policy** Karen Hamernik

Office of Land and Emergency Management Kathleen Raffaele
Office of Air and Radiation
- **Office of Air Quality Protection & Standards** Deirdre Murphy and Amy Vasu
- **Office of Transportation & Air Quality** Marion Hoyer

Office of Policy Dan Axelrad
Office of Children's Health Protection Rebecca Dzubow and Sue Euling
Office of Research and Development Lynn Flowers
Region 1 Meghan Cassidy
Region 2 Marian Olsen
Region 3 Martin Gehlhaus
Region 4 Solomon Pollard and Glenn Adams
Region 5 Mario Mangino
Region 6 Anna Milburn
Region 7 Kelly Schumacher
Region 8 Bob Benson
Region 9 Gerald Hiatt
Region 10 Lon Kissinger

Table of PFAS Regional Coordinators

Region 1	Meghan Cassidy	Cassidy.Meghan@epa.gov
Region 2	Mark Maddaloni	Maddaloni.Mark@epa.gov
Region 3	Rick Rogers	rogers.rick@epa.gov
Region 4	Becky Allenbach	Allenbach.Becky@epa.gov
Region 5	Kim Harris	harris.kimberly@epa.gov
Region 6	Michael Morton	Morton.michael@Epa.gov
Region 7	Amy Shields	Shields.Amy@epa.gov
Region 8	Sarah Bahrman	Bahrman.Sarah@epa.gov
Region 9	Matthew Small	Small.Matthew@epa.gov
Region 10	Linda Anderson-Carnahan	Anderson-Carnahan.Linda@epa.gov

Appointment

From: Jones, Samantha [Jones.Samantha@epa.gov]
Sent: 8/7/2018 3:37:01 AM
To: Jones, Samantha [Jones.Samantha@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Lowit, Anna [Lowit.Anna@epa.gov]; Laessig, Susan [Laessig.Susan@epa.gov]; Hamernik, Karen [Hamernik.Karen@epa.gov]; Raffaele, Kathleen [raffaele.kathleen@epa.gov]; Murphy, Deirdre [Murphy.Deirdre@epa.gov]; Vasu, Amy [Vasu.Amy@epa.gov]; Hoyer, Marion [hoyer.marion@epa.gov]; Axelrad, Daniel [Axelrad.Daniel@epa.gov]; Dzubow, Rebecca [Dzubow.Rebecca@epa.gov]; Euling, Susan [Euling.Susan@epa.gov]; Flowers, Lynn [Flowers.Lynn@epa.gov]; Cassidy, Meghan [Cassidy.Meghan@epa.gov]; Olsen, Marian [Olsen.Marian@epa.gov]; Gehlhaus, Martin [Gehlhaus.Martin@epa.gov]; Pollard, Solomon [Pollard.Solomon@epa.gov]; Adams, Glenn [Adams.Glenn@epa.gov]; Mangino, Mario [mangino.mario@epa.gov]; Milburn, Anna [Milburn.Anna@epa.gov]; Schumacher, Kelly [Schumacher.Kelly@epa.gov]; Benson, Bob [Benson.Bob@epa.gov]; Kissinger, Lon [Kissinger.Lon@epa.gov]; Maddaloni, Mark [Maddaloni.Mark@epa.gov]; rogers, rick [rogers.rick@epa.gov]; Allenbach, Becky [Allenbach.Becky@epa.gov]; Harris, Kimberly [harris.kimberly@epa.gov]; Morton, Michael [Morton.Michael@epa.gov]; Shields, Amy [Shields.Amy@epa.gov]; Bahrman, Sarah [Bahrman.Sarah@epa.gov]; Small, Matthew [Small.Matthew@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; Allen, Elizabeth [allen.elizabeth@epa.gov]; Bachman, Brenda [bachman.brenda@epa.gov]; Bahadori, Tina [Bahadori.Tina@epa.gov]; Owens, Beth [Owens.Beth@epa.gov]; Lambert, Jason [Lambert.Jason@epa.gov]; Champlin, Anna [Champlin.Anna@epa.gov]; Thayer, Kris [thayer.kris@epa.gov]; Radke-Farabaugh, Elizabeth [radke-farabaugh.elizabeth@epa.gov]; Kraft, Andrew [Kraft.Andrew@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]
CC: Foster, Stiven [Foster.Stiven@epa.gov]; Yaquian-Luna, Jose [yaquian-luna.josea@epa.gov]; Cooperstein, Sharon [Cooperstein.Sharon@epa.gov]; Johnson, Ann [Johnson.Ann@epa.gov]; Birchfield, Norman [Birchfield.Norman@epa.gov]; Fitz-James, Schatzi [Fitz-James.Schatzi@epa.gov]; Libelo, Laurence [Libelo.Laurence@epa.gov]; Cooke, Maryt [Cooke.Maryt@epa.gov]; Hines, Ronald [Hines.Ronald@epa.gov]; Gillespie, Andrew [Gillespie.Andrew@epa.gov]; Hodes, Colette [Hodes.Colette@epa.gov]; Lowery, Brigid [Lowery.Brigid@epa.gov]; Gaines, Linda [Gaines.Linda@epa.gov]; Jankowski, Mark [jankowski.mark@epa.gov]; Repasky, Ted [repasky.ted@epa.gov]; O'Connor, Daniel [oconnor.daniel@epa.gov]; Weber, Robert [Weber.Robert@epa.gov]; Messinger, Lisa [Messinger.Lisa@epa.gov]; Kidwell, JessicaL [Kidwell.JessicaL@epa.gov]; Nicoski, Dan [Nicoski.Dan@epa.gov]; Jones, Aaryn [Jones.Aaryn@epa.gov]; Davis, Molly [Davis.Molly@epa.gov]; Shell, Karrie-Jo [Shell.Karrie-Jo@epa.gov]; Thomas, Brett [Thomas.Brett@epa.gov]; France, Danny [France.Danny@epa.gov]; Wellborn, Floyd [Wellborn.Floyd@epa.gov]; Mitchell, Ken [Mitchell.Ken@epa.gov]; Kemker, Carol [Kemker.Carol@epa.gov]; Hall, Renea [Hall.Renea@epa.gov]; Campbell-Dunbar, Shawneille [Campbell-Dunbar.Shawneille@epa.gov]; Smith, Brian [Smith.Brian@epa.gov]

Subject: HOLD for PFAS: GenX and PFBS overview of peer review comments - SLIDES ADDED
Attachments: Peer Review Report_Task 0008_GenX_Final_7-25-18.pdf; Peer Review Report_Task 0008_PFBS_Final.pdf; PFAS stakeholder briefing_PFBS and GenX Chemicals_8-27-18.pptx
Location: Skype (**Ex. 6 Personal Privacy (PP)**

Start: 8/20/2018 5:00:00 PM
End: 8/20/2018 6:00:00 PM
Show Time As: Busy

Required Attendees: Miller, Gregory; Lowit, Anna; Laessig, Susan; Hamernik, Karen; Raffaele, Kathleen; Murphy, Deirdre; Vasu, Amy; Hoyer, Marion; Axelrad, Daniel; Dzubow, Rebecca; Euling, Susan; Lynn Flowers; Cassidy, Meghan; Olsen, Marian; Martin Gehlhaus; Pollard, Solomon; Adams, Glenn; Mangino, Mario; Milburn, Anna; Schumacher, Kelly; Bob Benson; Kissinger, Lon; Maddaloni, Mark; rogers, rick; Allenbach, Becky; Harris, Kimberly; Morton, Michael; Shields, Amy; Bahrman, Sarah; Small, Matthew; Anderson-Carnahan, Linda; Allen, Elizabeth; Bachman, Brenda; Bahadori, Tina; Owens, Beth; Lambert, Jason; Champlin, Anna; Thayer, Kris; Radke-Farabaugh, Elizabeth; Kraft, Andrew; Behl, Betsy; Jamie Strong; Jacobs, Brittany
Optional Attendees: Foster, Stiven; Yaquian-Luna, Jose; Cooperstein, Sharon; Ann Johnson; Birchfield, Norman; Fitz-James, Schatzi; Libelo, Laurence; Cooke, Maryt; Hines, Ronald; Gillespie, Andrew; Hodes, Colette; Lowery, Brigid; Gaines, Linda; Jankowski, Mark; Repasky, Ted; O'Connor, Daniel; Weber, Rob; Messinger, Lisa; Kidwell, JessicaL; Nicoski, Dan;

Jones, Aaryn; Davis, Molly; Shell, Karrie-Jo; Brett Thomas; Danny France; Wellborn, Floyd; Mitchell, Ken; Kemker, Carol; Hall, Renea; Campbell-Dunbar, Shawneille; Smith, Brian

UPDATE #2: Slides to facilitate overview. (These will be used in future meetings with representatives from other federal agencies and ECOS).

UPDATE #1: Materials added (peer review reports).

Hi all,

Please join us for an overview of the peer review comments received on GenX and PFBS and next steps. Materials to be added. We have invited all of the designated regional and program office representatives; please feel free to forward as appropriate within your office.

Thanks,
Samantha

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Appointment

From: Jones, Samantha [Jones.Samantha@epa.gov]
Sent: 4/24/2018 8:42:10 PM
To: Jones, Samantha [Jones.Samantha@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Lowit, Anna [Lowit.Anna@epa.gov]; Laessig, Susan [Laessig.Susan@epa.gov]; Hamernik, Karen [Hamernik.Karen@epa.gov]; Raffaele, Kathleen [raffaele.kathleen@epa.gov]; Murphy, Deirdre [Murphy.Deirdre@epa.gov]; Vasu, Amy [Vasu.Amy@epa.gov]; Hoyer, Marion [hoyer.marion@epa.gov]; Axelrad, Daniel [Axelrad.Daniel@epa.gov]; Dzubow, Rebecca [Dzubow.Rebecca@epa.gov]; Euling, Susan [Euling.Susan@epa.gov]; Cassidy, Meghan [Cassidy.Meghan@epa.gov]; Olsen, Marian [Olsen.Marian@epa.gov]; Gehlhaus, Martin [Gehlhaus.Martin@epa.gov]; Pollard, Solomon [Pollard.Solomon@epa.gov]; Adams, Glenn [Adams.Glenn@epa.gov]; Mangino, Mario [mangino.mario@epa.gov]; Milburn, Anna [Milburn.Anna@epa.gov]; Schumacher, Kelly [Schumacher.Kelly@epa.gov]; Hiatt, Gerald [Hiatt.Gerald@epa.gov]; Kissinger, Lon [Kissinger.Lon@epa.gov]; Flowers, Lynn [Flowers.Lynn@epa.gov]; Benson, Bob [Benson.Bob@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Owens, Beth [Owens.Beth@epa.gov]; Lambert, Jason [Lambert.Jason@epa.gov]; Bahadori, Tina [Bahadori.Tina@epa.gov]; Lavoie, Emma [Lavoie.Emma@epa.gov]; Harper, Ashley [harper.ashley@epa.gov]; Champlin, Anna [Champlin.Anna@epa.gov]; Maddaloni, Mark [Maddaloni.Mark@epa.gov]; rogers, rick [rogers.rick@epa.gov]; Allenbach, Becky [Allenbach.Becky@epa.gov]; Harris, Kimberly [harris.kimberly@epa.gov]; Morton, Michael [Morton.Michael@epa.gov]; Shields, Amy [Shields.Amy@epa.gov]; Bahrman, Sarah [Bahrman.Sarah@epa.gov]; Small, Matthew [Small.Matthew@epa.gov]; Anderson-Carnahan, Linda [Anderson-Carnahan.Linda@epa.gov]; Gillespie, Andrew [Gillespie.Andrew@epa.gov]
CC: Cooperstein, Sharon [Cooperstein.Sharon@epa.gov]; Johnson, Ann [Johnson.Ann@epa.gov]; Metz, Chloe [Metz.Chloe@epa.gov]; Braverman, Carole [braverman.carole@epa.gov]; Davison, Jenny [davison.jenny@epa.gov]; Maurice, Charles [maurice.charles@epa.gov]; Mendez, Thomas [mendez.thomas@epa.gov]; Moore, Tammy [moore.tammy@epa.gov]; Newman, Erin [newman.erin@epa.gov]; Poleck, Thomas [poleck.thomas@epa.gov]; Prendiville, Timothy [prendiville.timothy@epa.gov]; Seely, David [seely.david@epa.gov]; Shoven, Heather [shoven.heather@epa.gov]; Valberg, Amelia [valberg.amelia@epa.gov]; Wilson, Jennifer [wilson.jenniferA@epa.gov]; Suero, Maryann [suero.maryann@epa.gov]; Miller, Amy [Miller.Amy@epa.gov]; Li, Corine [Li.Corine@epa.gov]; Holsinger, Hannah [Holsinger.Hannah@epa.gov]; Grevatt, Peter [Grevatt.Peter@epa.gov]; Mclain, Jennifer [Mclain.Jennifer@epa.gov]; Burneson, Eric [Burneson.Eric@epa.gov]; 'mmaddalo22[Ex. 6 Personal Privacy (PP)]; Allen, Elizabeth [allen.elizabeth@epa.gov]; Jankowski, Mark [jankowski.mark@epa.gov]; Repasky, Ted [repasky.ted@epa.gov]; Bachman, Brenda [bachman.brenda@epa.gov]; Thomas, Lee [Thomas.Lee@epa.gov]; Speth, Thomas [Speth.Thomas@epa.gov]; brendabachman[Ex. 6 Personal Privacy (PP)]

Subject: Overview of GenX and PFBS assessments - prior to internal review (NOTE: revised materials and Adobe Connect link added)
Attachments: GENX PFBS PRESENTATION_Overview for Internal Agency Reviewers_FINAL_5-01-18.pptx
Location: AUDIO - Skype (link and # in body of invite); VIEWING OF SLIDES - Adobe Connect (link in body of invite)

Start: 5/1/2018 1:00:00 PM
End: 5/1/2018 2:00:00 PM
Show Time As: Busy

Required Attendees: Miller, Gregory; Lowit, Anna; Laessig, Susan; Hamernik, Karen; Raffaele, Kathleen; Murphy, Deirdre; Vasu, Amy; Hoyer, Marion; Axelrad, Daniel; Dzubow, Rebecca; Euling, Susan; Cassidy, Meghan; Olsen, Marian; Gehlhaus, Martin; Pollard, Solomon; Adams, Glenn; Mangino, Mario; Milburn, Anna; Schumacher, Kelly; Hiatt, Gerald; Kissinger, Lon; Lynn Flowers; Bob Benson; 'Jamie Strong'; Jacobs, Brittany; Behl, Betsy; Owens, Beth; Lambert, Jason; Bahadori, Tina; Lavoie, Emma; Harper, Ashley; Champlin, Anna; Maddaloni, Mark; rogers, rick; Allenbach, Becky; Harris, Kimberly; Morton, Michael; Shields, Amy; Bahrman, Sarah; Small, Matthew; Anderson-Carnahan, Linda; Gillespie, Andrew
Optional Attendees: Cooperstein, Sharon; Ann Johnson; Metz, Chloe; Braverman, Carole; Davison, Jenny; Maurice, Charles; Mendez, Thomas; Moore, Tammy; Newman, Erin; Poleck, Thomas; Prendiville, Timothy; Seely, David; Shoven, Heather; Valberg, Amelia; Wilson, Jennifer; Suero, Maryann; Miller, Amy; Li, Corine; Holsinger, Hannah; Grevatt, Peter; Mclain, Jennifer; Burneson, Eric; 'mmaddalo22[Ex. 6 Personal Privacy (PP)]; Allen, Elizabeth; Jankowski, Mark; Repasky, Ted; Bachman, Brenda; Thomas, Lee; Speth, Thomas; brendabachman[Ex. 6 Personal Privacy (PP)]

UPDATE#2: ADOBE CONNECT LINK ADDED. Please note that for the call on Tuesday morning, use Adobe Connect to view the slides, and use the Skype app or phone number for audio. Additionally, a revised version of the slides has been provided, please use the file labeled as "FINAL". These will be shared via Adobe Connect.

UPDATE#1: OVERVIEW MATERIALS ADDED

For viewing the slides: use Adobe Connect link

- Ex. 6 Personal Privacy (PP)

For audio: use Skype phone number or app → Toll number: + Ex. 6 Personal Privacy (PP) access code: Ex. 6 Personal Privacy (PP) nd a local number) Conference ID: Ex. 6 Personal Privacy (PP) me as access code); Join Skype Meeting (Trouble Joining? Try Skype Web App)

Hi all,

As noted below, we are offering a conference call to provide an overview of the GenX and PFBS assessments and answer any questions prior to the internal Agency review of the assessments. Overview materials will be added to the invite prior to the call.

Thank you,
OW/OST and ORD/NCEA

Dear Internal Agency Review contacts,

As you know, in response to an urgent and priority request by the Administrator, OW/OST and ORD/NCEA have taken the lead to develop human health toxicity values for GenX and PFBS, respectively. These two assessments are expanding on existing work from OPPT (GenX) and ORD (PFBS). Some background information is attached. We will be offering an opportunity for rapid review of these assessments starting on 5/07/18. Please identify the expert reviewers in your region or program to prepare for this rapid review – you will have one week for this review, and each program/region is expected to provide one consolidated set of comments. The timeline is short as the Administrator has asked for these assessments and toxicity values to be prepared in a 6-month period including peer review. We are scheduling a conference call on or about 4/30/18 to provide an overview of the assessments and answer any questions.

The list of review coordinators for your organizations is below. Unless we hear from you otherwise, these individuals will be our points of contact for the review.

Please forward your questions to Ashley Harper. We will review and respond accordingly.

Thank you,
OW/OST and ORD/NCEA

Agency Review Contacts

Office of Water Greg Miller

Office of Chemical Safety and Pollution Prevention

- **Office of Pesticide Programs** Anna Lowit
- **Office of Pollution Prevention and Toxics** Susan Laessig
- **Office of Science Coordination and Policy** Karen Hamernik

Office of Land and Emergency Management Kathleen Raffaele

Office of Air and Radiation

- **Office of Air Quality Protection & Standards** Deirdre Murphy and Amy Vasu
- **Office of Transportation & Air Quality** Marion Hoyer

Office of Policy Dan Axelrad

Office of Children's Health Protection Rebecca Dzubow and Sue Euling

Office of Research and Development/Office of Science Policy Lynn Flowers

Region 1 Meghan Cassidy

Region 2 Marian Olsen

Region 3 Martin Gehlhaus

Region 4 Solomon Pollard and Glenn Adams

Region 5 Mario Mangino

Region 6 Anna Milburn

Region 7 Kelly Schumacher

Region 8 Bob Benson

Region 9 Gerald Hiatt

Region 10 Lon Kissinger

Appointment

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 7/7/2021 6:47:51 PM
To: Euling, Susan [Euling.Susan@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]; Weyer, Erica [weyer.erica@epa.gov]

Subject: GenX schedule revisit
Attachments: GenX chemicals tox assessment SCHEDULE 070621 BB.docx
Location: Microsoft Teams Meeting

Start: 7/8/2021 1:30:00 PM
End: 7/8/2021 2:00:00 PM
Show Time As: Busy

Required Attendees: Jacobs, Brittany; Miller, GregoryG; Weyer, Erica

---

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Appointment

From: Jacobs, Brittany [jacobs.brittany@epa.gov]
Sent: 6/3/2021 2:34:32 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Euling, Susan [Euling.Susan@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]

Subject: GenX Assessment Check-In
Location: Microsoft Teams Meeting

Start: 6/9/2021 3:00:00 PM
End: 6/9/2021 4:00:00 PM
Show Time As: Busy

Required Attendees: Euling, Susan; Miller, GregoryG

Scheduling this for us to touch base and discuss three issues relating to the GenX assessment. I am hoping to add some materials for discussion later on, but want to get this on the calendar before the time disappears.

- Subchronic to chronic uncertainty factor
  - Ex. 5 Deliberative Process (DP)
  - [redacted]
- Half life data in workers
  - [redacted]
  - [redacted]
- Systematic Review
  - [redacted]
  - [redacted]

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

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From: Behl, Betsy [Behl.Betsy@epa.gov]
Sent: 7/9/2021 7:18:38 PM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Euling, Susan [Euling.Susan@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]

Subject: discuss GenX schedule
Location: Microsoft Teams Meeting

Start: 7/12/2021 2:00:00 PM
End: 7/12/2021 2:30:00 PM
Show Time As: Busy

Required Attendees: Euling, Susan; Jacobs, Brittany; Miller, GregoryG

<!--[if lte mso 15 || CheckWebRef]-->

Behl, Betsy has shared a OneDrive for Business file with you. To view it, click the link below.

GenX chemicals tox assessment SCHEDULE 070621 BB sye bbedits.docx

<!--[endif]-->

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From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 7/2/2021 1:20:05 PM
To: Euling, Susan [Euling.Susan@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]
CC: Miller, GregoryG [Miller.Gregory@epa.gov]

Subject: GenX discusssion
Location: Microsoft Teams Meeting

Start: 7/6/2021 4:00:00 PM
End: 7/6/2021 4:30:00 PM
Show Time As: Busy

Required Attendees: Behl, Betsy; Jacobs, Brittany
Optional Attendees: Miller, GregoryG

Agenda:
1) (
2) [

Ex. 5 Deliberative Process (DP)

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Appointment

From: Nagle, Deborah [Nagle.Deborah@epa.gov]
Sent: 7/12/2021 3:39:32 PM
To: Nagle, Deborah [Nagle.Deborah@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Wood, Robert [Wood.Robert@epa.gov]; Euling, Susan [Euling.Susan@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]

Subject: Proposed GenX schedule
Location: Microsoft Teams Meeting

Start: 7/13/2021 12:30:00 PM
End: 7/13/2021 1:00:00 PM
Show Time As: Busy

Required Attendees: Betsy Behl; Robert Wood; Euling, Susan; Jacobs, Brittany; Miller, GregoryG

<!--[if lte mso 15 || CheckWebRef]-->

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GenX chemicals tox assessment SCHEDULE 071221.docx

<!--[endif]-->

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Appointment

From: Jacobs, Brittany [jacobs.brittany@epa.gov]
Sent: 7/6/2021 2:44:24 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Euling, Susan [Euling.Susan@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]

Subject: GenX Check-Ins: Modeling Discussion
Location: Microsoft Teams Meeting

Start: 7/8/2021 6:00:00 PM
End: 7/8/2021 6:30:00 PM
Show Time As: Busy

Required Attendees: Euling, Susan; Miller, GregoryG

Hello,

I am scheduling some GenX check-ins for us to discuss issues I identify while responding to the peer review comments and in finalizing the document. Our schedules are pretty packed, so I'll aim for half hour discussions weekly and try to provide materials in advance for discussion. I will add the response to comments doc and assessment I am working off of once my Outlook cooperates.

For this first meeting, I want to discuss a path forward for responding to this peer reviewer's comment:
Selection of Dupont-18405-1037, 2010 for RfD derivation is scientifically justified and clearly described in the current toxicity assessment, as it was in 2018. Confidence in the study is only increased by the NTP PWG's review of liver pathology, as it is essentially confirmatory of the original findings. Also, despite an adverse response (i.e., critical effect) being defined by a constellation of lesions rather than a single one, the resulting PODHED changed very little from 2018 (i.e., it was reduced from 0.023 to 0.01 mg/kg/day). It is also noteworthy that the reduction in PODHED remained minor despite the change from male to female mice as its basis. Though I support the use of Dupont's reproductive/developmental study for RfD derivation, the new definition of adversity raises an issue for dose-response modeling. Based on the slide review worksheets in Appendix E, several mice were diagnosed by the NTP PWG with varying degrees of cytoplasmic alteration only, or in some cases, cytoplasmic alteration accompanied by mixed cell infiltration. In the absence of necrosis or apoptosis, it would seem appropriate to consider these diagnoses as adaptive and non-adverse (as was done in Table 11 where 0.5 mg/kg/day was determined to be a NOAEL in Dupont's 90-day mouse study, despite cytoplasmic alteration in 10/10 males). However, the dose-response data modeled in Appendix F suggest otherwise (e.g., 24/24 female mice in the high-dose group were selected for dose-response modeling, yet animal numbers 5027, 5033 and 5035 were diagnosed with mild cytoplasmic alteration and nothing more). Shouldn't the absence of hepatocellular necrosis or apoptosis disqualify an animal from inclusion in dose-response modeling? Admittedly, as the slide review worksheets do not indicate which animals were in a given dose group, this question may be for naught.

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Appointment

From: Behl, Betsy [Behl.Betsy@epa.gov]
Sent: 7/9/2021 4:58:48 PM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Euling, Susan [Euling.Susan@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]

Subject: genX schedule more thoughts
Location: Microsoft Teams Meeting

Start: 7/9/2021 5:00:00 PM
End: 7/9/2021 5:30:00 PM
Show Time As: Tentative

Required Attendees: Euling, Susan; Miller, GregoryG; Brittany Jacobs

GenX chemicals tox assessment SCHEDULE 070621 BB sye bbedits.docx

Sharing this document. We can talk more on Monday, but I had some additional thoughts on how to streamline and decisions I cant make

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Appointment

From: Jacobs, Brittany [jacobs.brittany@epa.gov]
Sent: 6/10/2021 3:10:47 AM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Euling, Susan [Euling.Susan@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]

Subject: GenX follow-up discussion UFS
Location: Microsoft Teams Meeting

Start: 6/15/2021 2:00:00 PM
End: 6/15/2021 3:00:00 PM
Show Time As: Busy

Required Attendees: Euling, Susan; Miller, GregoryG

<!--[if lte mso 15 || CheckWebRef]-->

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GenX chemicals_subchronic to chronic UF background info.docx

<!--[endif]-->

Ex. 5 Deliberative Process (DP)

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From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 7/13/2021 5:11:20 PM
To: Euling, Susan [Euling.Susan@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]

Subject: GenX 1 pager
Location: Microsoft Teams Meeting

Start: 7/13/2021 6:30:00 PM
End: 7/13/2021 7:00:00 PM
Show Time As: Busy

Required Attendees: Jacobs, Brittany; Miller, GregoryG

If needed – let's see what we can do via email.

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Appointment

From: Behl, Betsy [Behl.Betsy@epa.gov]
Sent: 7/28/2021 6:19:35 PM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Euling, Susan [Euling.Susan@epa.gov]; Cassidy, Meghan [Cassidy.Meghan@epa.gov]; DAgostino, Daniel [DAgostino.Daniel@epa.gov]; Rogers, Rick [rogers.rick@epa.gov]; Jones, Aaryn [Jones.Aaryn@epa.gov]; Harris, Kimberly [harris.kimberly@epa.gov]; Morton, Michael [Morton.Michael@epa.gov]; Wooster-Brown, Catherine [Wooster-Brown.Catherine@epa.gov]; Bahrman, Sarah [Bahrman.Sarah@epa.gov]; Small, Matthew [Small.Matthew@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]
CC: Lyssy, Gregory [lyssy.gregory@epa.gov]

Subject: Status of State efforts to establish guidelines for GenX chemicals
Location: Microsoft Teams Meeting

Start: 8/2/2021 4:30:00 PM
End: 8/2/2021 5:00:00 PM
Show Time As: Busy

Required Attendees: Behl, Betsy; Jacobs, Brittany; Euling, Susan; Cassidy, Meghan; DAgostino, Daniel; Rogers, Rick; Jones, Aaryn; Harris, Kimberly; Morton, Michael; Wooster-Brown, Catherine; Bahrman, Sarah; Small, Matthew; Szerlog, Michael
Optional Attendees: Lyssy, Gregory

<!--[if lte mso 15 || CheckWebRef]-->

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State values for GenX.docx

<!--[endif]-->

We are approaching the final stages of development of the GenX toxicity values and would like to get an understand of which states and tribes may have developed or are in the process of developing standards for GenX chemicals in drinking water, It would also be helpful to know if states are monitoring for these chemicals. We are aware of a few states (e.g. North Carolina and Michigan) that are active in this area but realize this is a dynamic situation. Please add to the attached table if you can providing contact information for each state and where available a link to the guideline for GenX in drinking water. We will extract the information into the last column.

Thanks for your help,

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Appointment

From: Behl, Betsy [Behl.Betsy@epa.gov]
Sent: 7/26/2021 3:46:10 PM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Euling, Susan [Euling.Susan@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; aic7@CDC.gov [aic7@cdc.gov]

Subject: GenX plans for monitoring by NHANES
Attachments: Calafat19.pdf
Location: Microsoft Teams Meeting

Start: 8/2/2021 3:30:00 PM
End: 8/2/2021 4:00:00 PM
Show Time As: Busy

Required Attendees: Euling, Susan; Miller, GregoryG; Jacobs, Brittany; aic7@cdc.gov

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From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 6/8/2021 4:46:15 PM
To: Euling, Susan [Euling.Susan@epa.gov]; Thayer, Kris [thayer.kris@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]
CC: Kraft, Andrew [Kraft.Andrew@epa.gov]; Shams, Dahnish [Shams.Dahnish@epa.gov]; Soto, Vicki [Soto.Vicki@epa.gov]

Subject: Part 1: GenX SR/study qual eval discussion
Attachments: DRAFT GenX Chemicals Toxicity Assessment_2.4.21 CLEAN.docx
Location: Microsoft Teams Meeting

Start: 6/10/2021 3:30:00 PM
End: 6/10/2021 4:00:00 PM
Show Time As: Busy

Required Attendees: Thayer, Kris; Miller, GregoryG; Jacobs, Brittany
Optional Attendees: Kraft, Andrew; Shams, Dahnish; Soto, Vicki

Moving due to folks' availability.

Hi Kris,

We met with Samantha, Andrew, and Dahnish last week to discuss next steps to finalize GenX. Samantha offered your expert assistance on surgically revising the GenX study qual eval description (currently a mix of OPPT and IRIS)…with minimal effort and maximum justification!

The peer review draft is attached – we are revising based on peer review comments now so please do not share.

We really appreciate your assistance.

Thanks,
Sue

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Appointment

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 8/24/2021 3:24:05 PM
To: Euling, Susan [Euling.Susan@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]

Subject: GenX comms materials disc
Location: Microsoft Teams Meeting

Start: 8/25/2021 12:30:00 PM
End: 8/25/2021 1:00:00 PM
Show Time As: Busy

Required Attendees: Jacobs, Brittany

Keeping this meeting for the two of us to discuss.

Agenda:

Identify the components of the comms materials for GenX needed, coordinating review, and timing:

Doc	When Cara and Colleen need to receive for review	Uncertainties/Questions
FRN		
Comms plan (template)		
General Public fact sheet		Does Q&A go here?
Technical fact sheet		

are we missing anything? What if we end up briefing the administrator – we would need a briefing one pager or something else?

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Appointment

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 9/1/2021 1:51:04 PM
To: Euling, Susan [Euling.Susan@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]

Subject: GenX discussion
Location: Microsoft Teams Meeting

Start: 9/1/2021 5:30:00 PM
End: 9/1/2021 6:00:00 PM
Show Time As: Busy

Required Attendees: Behl, Betsy; Miller, GregoryG; Jacobs, Brittany

---

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Appointment

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 9/1/2021 8:26:51 PM
To: Euling, Susan [Euling.Susan@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]

Subject: #3 GenX RTC working mtg
Location: Microsoft Teams Meeting

Start: 9/7/2021 4:30:00 PM
End: 9/7/2021 5:00:00 PM
Show Time As: Busy

Required Attendees: Miller, GregoryG; Jacobs, Brittany

Now Betsy has put the HECD mtg at 12-12:30pm…so this has shrunk. We will work fast!

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From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 8/31/2021 4:58:16 PM
To: Euling, Susan [Euling.Susan@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]

Subject: Mtg #2: GenX RTC public
Attachments: GenX Assessment Resp to Public Comments_Tech Edit_7.27.2020 sye review bb.docx
Location: Microsoft Teams Meeting

Start: 9/1/2021 7:00:00 PM
End: 9/1/2021 8:00:00 PM
Show Time As: Busy

Required Attendees: Jacobs, Brittany; Miller, GregoryG

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From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 8/31/2021 4:57:21 PM
To: Euling, Susan [Euling.Susan@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]

Subject: Mtg #1: GenX resolve comments working mtg
Attachments: GenX Assessment Resp to Public Comments_Tech Edit_7.27.2020 sye review bb.docx
Location: Microsoft Teams Meeting

Start: 8/31/2021 7:30:00 PM
End: 8/31/2021 8:30:00 PM
Show Time As: Busy

Required Attendees: Miller, GregoryG; Jacobs, Brittany

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From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 9/14/2021 7:26:31 PM
To: Euling, Susan [Euling.Susan@epa.gov]; gaz5@cdc.gov; Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]; Soares, Barbara [soares.barbara@epa.gov]; Abadin, Henry (ATSDR/DTHHS/ETB) [hga0@cdc.gov]
CC: Buser, Melanie (ATSDR/OAD/OIA) [wyf9@cdc.gov]; Ruiz, Patricia (ATSDR/OAD/OIA) [doz8@cdc.gov]; Prussia, Andrew James (ATSDR/OAD/OIA) [xby2@cdc.gov]

Subject: ATSDR-EPA discussion of EPA's Toxicity Assessment for GenX chemicals
Attachments: 091921 EPA Final Toxicity Assessment for GenX chems briefing ATSDR DO NOT DISTRIBUTE.pdf
Location: Microsoft Teams Meeting

Start: 9/23/2021 1:00:00 PM
End: 9/23/2021 2:00:00 PM
Show Time As: Busy

Required Attendees: gaz5@cdc.gov; Jacobs, Brittany; Miller, GregoryG; Behl, Betsy; Donohue, Joyce; Soares, Barbara; Abadin, Henry (ATSDR/DTHHS/ETB)
Optional Attendees: Buser, Melanie (ATSDR/OAD/OIA); Ruiz, Patricia (ATSDR/OAD/OIA); Prussia, Andrew James (ATSDR/OAD/OIA)

This meeting will be an opportunity for ATSDR to provide verbal comments on the pre-publication version of EPA's final toxicity assessment for GenX chemicals.

We look forward to your valuable input.

We request that you please ***DO NOT DISTRIBUTE, CITE, OR QUOTE*** the briefing slides (attached) or the draft document (provided by Betsy).

Thank you.

Susan Euling, Ph.D.
Human Health Risk Assessment Branch/HECD
Office of Science and Technology, Office of Water
U.S. Environmental Protection Agency
(o) 202-566-2717
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Appointment

From: Behl, Betsy [Behl.Betsy@epa.gov]
Sent: 10/6/2021 5:34:36 PM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]; Euling, Susan [Euling.Susan@epa.gov]; vladik_dorjets Ex. 6 Personal Privacy (PP); April.N.Kluever [April.N.Kluever Ex. 6 Personal Privacy (PP) Cooperstein, Sharon [Cooperstein.Sharon@epa.gov]

Subject: GenX toxicity assessment briefing for OMB
Location: zoom meeting below set up by OMB so we can share the presentation

Start: 10/13/2021 6:00:00 PM
End: 10/13/2021 6:30:00 PM
Show Time As: Busy

Required Attendees: Jacobs, Brittany; Miller, GregoryG; Euling, Susan; Ex. 6 Personal Privacy (PP) Kluever, April N. EOP/OMB; Cooperstein, Sharon

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Meeting ID:

Passcode:

SIP:

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Appointment

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 10/14/2021 4:01:50 PM
To: Euling, Susan [Euling.Susan@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]

Subject: troubleshooting GenX
Location: Microsoft Teams Meeting

Start: 10/14/2021 6:00:00 PM
End: 10/14/2021 6:30:00 PM
Show Time As: Busy

Required Attendees: Jacobs, Brittany; Miller, GregoryG

I have a meeting with Colleen and Betsy at 4:30pm and would like to gather input from you prior to that meeting. Greg, do you think you can get the answer or partial answer to #2 before this meeting?

1) Check in on GenX
    a. Post-release outreach
    b. Comms plan status
    c. HFPO-DA acyl fluoride issue and email response
2) Additional PFOA/S funding needs through Nov. 11th

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Appointment

From: Nagle, Deborah [Nagle.Deborah@epa.gov]
Sent: 7/12/2021 3:39:32 PM
To: Nagle, Deborah [Nagle.Deborah@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Wood, Robert [Wood.Robert@epa.gov]; Euling, Susan [Euling.Susan@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]

Subject: Proposed GenX schedule
Location: Microsoft Teams Meeting

Start: 7/13/2021 12:30:00 PM
End: 7/13/2021 1:00:00 PM
Show Time As: Busy

Required Attendees: Betsy Behl; Robert Wood; Euling, Susan; Jacobs, Brittany; Miller, GregoryG

<!--[if lte mso 15 || CheckWebRef]-->

Snowden, Belinda has shared a OneDrive for Business file with you. To view it, click the link below.

GenX chemicals tox assessment SCHEDULE 071221.docx

<!--[endif]-->

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Appointment

From: Behl, Betsy [Behl.Betsy@epa.gov]
Sent: 11/1/2021 12:03:12 PM
To: Behl, Betsy [Behl.Betsy@epa.gov]; svia@awwa.org; matt@nrwa.org; nohle@rcap.org; Euling, Susan [Euling.Susan@epa.gov]; Jennifer Palmiotto [jennifer@nrwa.org]; keegan@nrwa.org; vandehei@amwa.net; Burneson, Eric [Burneson.Eric@epa.gov]; Rodgers-Jenkins, Crystal [Rodgers-Jenkins.Crystal@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; jadler@acwa-us.org; janastasio@acwa-us.org
CC: Chris Moody [CMoody@awwa.org]; Miller, GregoryG [Miller.Gregory@epa.gov]; Klasen, Matthew [Klasen.Matthew@epa.gov]; Sarah Buck [sbuck@rcap.org]

Subject: Final toxicity assessment for GenX chemicals
Location: Microsoft Teams Meeting

Start: 11/2/2021 6:30:00 PM
End: 11/2/2021 7:30:00 PM
Show Time As: Busy

Required Attendees: svia@awwa.org; matt@nrwa.org; nohle@rcap.org; Euling, Susan; Jennifer Palmiotto; keegan@nrwa.org; vandehei@amwa.net; Burneson, Eric; Rodgers-Jenkins, Crystal; Jacobs, Brittany; jadler@acwa-us.org; janastasio@acwa-us.org
Optional Attendees: Chris Moody; Sarah Buck; Miller, GregoryG; Klasen, Matthew

The U.S. Environmental Protection Agency (EPA) will release shortly the final human health toxicity assessment for Hexafluoropropylene Oxide (HFPO) Dimer Acid and its Ammonium Salt (referred to as "GenX chemicals"). The finalization of the assessment fulfills/constitutes/is part of EPA's efforts to increase the amount of information that is publicly available on chemicals in the PFAS class. A toxicity assessment is a written summary of the potential health effects associated with a chemical and is similar to assessments developed under EPA's Integrated Risk Information System (IRIS). The assessment provides hazard identification, dose-response information, and derives toxicity values called oral reference doses (RfDs) for chronic and subchronic exposures. EPA plans to use this toxicity assessment and information on exposure, analytical methods and treatment to develop a Drinking Water Health Advisory in the spring of 2022.

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Appointment

From: Behl, Betsy [Behl.Betsy@epa.gov]
Sent: 10/6/2021 5:34:36 PM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]; Euling, Susan [Euling.Susan@epa.gov]; vladik_dorjets Ex. 6 Personal Privacy (PP) April.N.Kluever Ex. 6 Personal Privacy (PP) v]; Cooperstein, Sharon [Cooperstein.Sharon@epa.gov]

Subject: GenX toxicity assessment briefing for OMB
Location: zoom meeting below set up by OMB so we can share the presentation

Start: 10/13/2021 6:00:00 PM
End: 10/13/2021 6:30:00 PM
Show Time As: Busy

Required Attendees: Jacobs, Brittany; Miller, GregoryG; Euling, Susan; vladik_dorjets Ex. 6 Personal Privacy (PP) ; Kluever, April N. EOP/OMB; Cooperstein, Sharon

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Dial:

Meeting ID:

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International numbers

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H.323:

Meeting ID:
Passcode:
SIP:
Passcode:

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Appointment

From: Behl, Betsy [Behl.Betsy@epa.gov]
Sent: 11/1/2021 1:49:39 PM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Euling, Susan [Euling.Susan@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]

Subject: organizing the GenX outreach briefings
Location: Microsoft Teams Meeting

Start: 11/1/2021 6:30:00 PM
End: 11/1/2021 7:00:00 PM
Show Time As: Busy

Required Attendees: Euling, Susan; Brittany Jacobs; Miller, GregoryG

1) Ex. 5 Deliberative Process (DP)

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Appointment

From: Euling, Susan [Euling.Susan@epa.gov]
Sent: 10/18/2021 4:23:45 PM
To: Euling, Susan [Euling.Susan@epa.gov]; Akhter, Shamima [Akhter.Shamima@epa.gov]; Cunningham, Kelly [cunningham.kelly@epa.gov]; DAnglada, Lesley [DAnglada.Lesley@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Keel, Adrienne [keel.adrienne@epa.gov]; Lindberg, Casey [Lindberg.Casey@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]; Ravenscroft, John [Ravenscroft.John@epa.gov]; Soares, Barbara [soares.barbara@epa.gov]; Young, Melanie [Young.Melanie@epa.gov]; Czarina C Cooper [Cooper.Czarina@epa.gov]

Subject: HRAB staff meeting
Attachments: Untitled Attachment; Untitled Attachment; Untitled Attachment; Untitled Attachment; Untitled Attachment
Location: Microsoft Teams Meeting

Start: 10/26/2021 3:30:00 PM
End: 10/26/2021 4:00:00 PM
Show Time As: Busy

Recurrence: Weekly
Occurs every Tuesday from 11:30 AM to 12:00 PM effective 10/26/2021 until 11/30/2021.
Required Attendees: Akhter, Shamima; Cunningham, Kelly; DAnglada, Lesley; Donohue, Joyce; Jacobs, Brittany; Keel, Adrienne; Lindberg, Casey; Miller, GregoryG; Ravenscroft, John; Soares, Barbara; Young, Melanie; Czarina C Cooper

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From: Behl, Betsy [Behl.Betsy@epa.gov]
Sent: 11/1/2021 6:10:38 PM
To: Behl, Betsy [Behl.Betsy@epa.gov]; ScottL@astswmo.org; DaniaR@astswmo.org; Euling, Susan [Euling.Susan@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]; Rodgers-Jenkins, Crystal [Rodgers-Jenkins.Crystal@epa.gov]; Burneson, Eric [Burneson.Eric@epa.gov]
CC: Charles Reyes [CharlesR@astswmo.org]; Albert, Ryan [Albert.Ryan@epa.gov]

Subject: Final toxicity value for GenX chemicals (a PFAS chemical): Briefing to ASTSWMO
Location: Microsoft Teams Meeting

Start: 11/4/2021 2:00:00 PM
End: 11/4/2021 3:00:00 PM
Show Time As: Busy

Required Attendees: Behl, Betsy; ScottL@astswmo.org; DaniaR@astswmo.org; Euling, Susan; Jacobs, Brittany; Miller, GregoryG; Rodgers-Jenkins, Crystal; Burneson, Eric
Optional Attendees: Charles Reyes; Albert, Ryan

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Appointment

From: Akhter, Shamima [Akhter.Shamima@epa.gov]
Sent: 10/26/2021 5:48:47 PM
To: Akhter, Shamima [Akhter.Shamima@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]; Euling, Susan [Euling.Susan@epa.gov]; Flaherty, Colleen [Flaherty.Colleen@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]
CC: Rodgers-Jenkins, Crystal [Rodgers-Jenkins.Crystal@epa.gov]; Burneson, Eric [Burneson.Eric@epa.gov]

Subject: FSTRAC Webinar on EPA's Final Human Health Toxicity Values for GenX Chemicals

Start: 11/4/2021 4:45:00 PM
End: 11/4/2021 6:00:00 PM
Show Time As: Busy

Recurrence: (none)

Required Attendees: Jacobs, Brittany; Miller, GregoryG; Euling, Susan; Flaherty, Colleen; Behl, Betsy
Optional Attendees: Rodgers-Jenkins, Crystal; Burneson, Eric

Agenda for FSTRAC Webinar Scheduled for Thursday, November 4, 2022, from 1:00 – 2:00 p.m., Eastern time

- Welcome and Introduction
- Recent release of EPA's final Toxicity Assessment for GenX Chemicals - Brittany Jacobs, Ph.D., OW/EPA

On October 25th, the U.S. Environmental Protection Agency (EPA) released the final human health toxicity assessment for Hexafluoropropylene Oxide (HFPO) Dimer Acid and its Ammonium Salt (referred to as "GenX chemicals"). The final GenX chemicals assessment is part of EPA's efforts to increase the amount of information that is publicly available on chemicals in the PFAS class noted in EPA's Strategic Roadmap to address per- and polyfluoroalkyl substances (PFAS). The assessment presents a critical review of the available human health effects information on GenX chemicals. The assessment provides hazard identification, dose-response information, and derives toxicity values called oral reference doses (RfDs) for chronic and subchronic exposures. A toxicity assessment is a written summary of the potential health effects associated with a chemical and is similar to assessments developed under EPA's Integrated Risk Information System (IRIS). EPA plans to use this toxicity assessment and information on exposure, analytical methods and treatment to develop a Drinking Water Health Advisory in the spring of 2022. Link to the assessment: https://www.epa.gov/chemical-research/human-health-toxicity-assessments-genx-chemicals

Please use the instructions below to join the FSTRAC Webinar

Microsoft Teams meeting

1. **To join on your computer or mobile app, please click on the following link through your Outlook Invitation:**

Click here to join the meeting

Then, click on "Open your Teams app" or "Continue on this browser" to join.

2. **If you are unable to reach the Teams meeting by clicking on the link above**, please copy and paste the following url into your browser and press return on your keyboard:

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Then, click on "Open your Teams app" or "Continue on this browser" to join.

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Appointment

From: Jacobs, Brittany [jacobs.brittany@epa.gov]
Sent: 2/1/2021 11:35:49 AM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]

Subject: Check-In
Attachments: Untitled Attachment; Untitled Attachment
Location: Microsoft Teams Meeting

Start: 2/3/2021 3:30:00 PM
End: 2/3/2021 4:00:00 PM
Show Time As: Busy

Recurrence: Weekly
Occurs every Wednesday from 10:30 AM to 11:00 AM effective 2/3/2021 until 3/3/2021.
Required Attendees: Miller, Gregory

Hi Greg,

I thought it would be good for us to check-in weekly while I'm acting if that works for you.

Britt

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Appointment

From: Strong, Jamie [Strong.Jamie@epa.gov]
Sent: 1/6/2021 2:21:05 PM
To: Strong, Jamie [Strong.Jamie@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]

Subject: talk about GenX DB UF write up revisions
Location: Microsoft Teams Meeting

Start: 1/8/2021 6:00:00 PM
End: 1/8/2021 6:30:00 PM
Show Time As: Busy

Required Attendees: Miller, Gregory; Jacobs, Brittany

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Appointment

From: Strong, Jamie [Strong.Jamie@epa.gov]
Sent: 1/25/2021 6:25:17 PM
To: Strong, Jamie [Strong.Jamie@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]

Subject: GenX
Location: Microsoft Teams Meeting

Start: 1/26/2021 1:30:00 PM
End: 1/26/2021 2:00:00 PM
Show Time As: Busy

Required Attendees: Miller, Gregory; Jacobs, Brittany

Microsoft Teams meeting

Join on your computer or mobile app
Click here to join the meeting

Or call in (audio only)
Ex. 6 Personal Privacy (PP) Washington DC
Find a local number | Reset PIN

By participating in EPA hosted virtual meetings and events, you are consenting to abide by the agency's terms of use. In addition, you acknowledge that content you post may be collected and used in support of FOIA and eDiscovery activities.

Learn More | Meeting options

Appointment

From: Strong, Jamie [Strong.Jamie@epa.gov]
Sent: 12/9/2020 2:09:52 PM
To: Strong, Jamie [Strong.Jamie@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]

Subject: talk about GenX white paper
Location: Microsoft Teams Meeting

Start: 12/10/2020 2:00:00 PM
End: 12/10/2020 2:30:00 PM
Show Time As: Busy

Required Attendees: Miller, Gregory; Jacobs, Brittany

Microsoft Teams meeting

Join on your computer or mobile app
Click here to join the meeting

Or call in (audio only)

Ex. 6 Personal Privacy (PP), Washington DC

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Appointment

From: Strong, Jamie [Strong.Jamie@epa.gov]
Sent: 12/3/2020 2:54:35 PM
To: Strong, Jamie [Strong.Jamie@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Snowden, Belinda [snowden.belinda@epa.gov]

Subject: Discuss GenX
Location: Microsoft Teams Meeting

Start: 12/3/2020 3:30:00 PM
End: 12/3/2020 4:00:00 PM
Show Time As: Busy

Required Attendees: Miller, Gregory; Jacobs, Brittany; Behl, Betsy; Snowden, Belinda

---

Microsoft Teams meeting

Join on your computer or mobile app
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Learn More | Meeting options

Appointment

From: Strong, Jamie [Strong.Jamie@epa.gov]
Sent: 12/3/2020 1:28:29 PM
To: Strong, Jamie [Strong.Jamie@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]

Subject: Talk about GenX
Location: Microsoft Teams Meeting

Start: 12/3/2020 2:30:00 PM
End: 12/3/2020 3:00:00 PM
Show Time As: Busy

Required Attendees: Miller, Gregory; Jacobs, Brittany

Just to fill Greg in on the meeting yesterday

Microsoft Teams meeting

Join on your computer or mobile app
Click here to join the meeting

Or call in (audio only)
Ex. 6 Personal Privacy (PP) ashington DC

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Learn More | Meeting options

Appointment

From: Strong, Jamie [Strong.Jamie@epa.gov]
Sent: 10/22/2020 3:06:05 PM
To: Strong, Jamie [Strong.Jamie@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]

Subject: GenX touch base
Location: Microsoft Teams Meeting

Start: 10/22/2020 6:30:00 PM
End: 10/22/2020 7:00:00 PM
Show Time As: Busy

Required Attendees: Miller, Gregory; Jacobs, Brittany

Join Microsoft Teams Meeting

Ex. 6 Personal Privacy (PP) ashington DC (Toll)

Local numbers | Reset PIN | Learn more about Teams | Meeting options

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Appointment

From: Strong, Jamie [Strong.Jamie@epa.gov]
Sent: 10/15/2020 11:16:56 AM
To: Strong, Jamie [Strong.Jamie@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]

Subject: GENX
Location: Microsoft Teams Meeting

Start: 10/15/2020 12:00:00 PM
End: 10/15/2020 1:00:00 PM
Show Time As: Busy

Required Attendees: Miller, Gregory; Jacobs, Brittany

Join Microsoft Teams Meeting

Ex. 6 Personal Privacy (PP) Washington DC (Toll)

Local numbers | Reset PIN | Learn more about Teams | Meeting options

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Appointment

From: Strong, Jamie [Strong.Jamie@epa.gov]
Sent: 10/15/2020 6:17:41 PM
To: Strong, Jamie [Strong.Jamie@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]

Subject: Talk about GenX
Location: Microsoft Teams Meeting

Start: 10/16/2020 1:00:00 PM
End: 10/16/2020 2:00:00 PM
Show Time As: Busy

Required Attendees: Miller, Gregory; Jacobs, Brittany

Join Microsoft Teams Meeting

ngton DC (Toll)

Ex. 6 Personal Privacy (PP)

Local numbers | Reset PIN | Learn more about Teams | Meeting options

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Appointment

From: Strong, Jamie [Strong.Jamie@epa.gov]
Sent: 10/20/2020 3:16:01 PM
To: Strong, Jamie [Strong.Jamie@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]

Subject: GenX
Location: Microsoft Teams Meeting

Start: 10/20/2020 7:00:00 PM
End: 10/20/2020 8:00:00 PM
Show Time As: Busy

Required Attendees: Miller, Gregory; Jacobs, Brittany

Join Microsoft Teams Meeting

Ex. 6 Personal Privacy (PP)

Local numbers | Reset PIN | Learn more about Teams | Meeting options

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Appointment

From: Miller, Gregory [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=0E889CDC40224A5484182092E4824FA7-GMILLE03]
Sent: 10/6/2020 5:49:30 PM
To: Miller, Gregory [Miller.Gregory@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]

Subject: Talk about GenX (and PFBA)
Location: Microsoft Teams Meeting

Start: 10/8/2020 5:00:00 PM
End: 10/8/2020 6:00:00 PM
Show Time As: Busy

Required Attendees: Strong, Jamie; Jacobs, Brittany

Wanted to get this on the calendar. Jamie, I see that you have lots of tentative meetings on your calendar. Feel free to offer another time for this meeting if you need to.

Join Microsoft Teams Meeting

Learn more about Teams | Meeting options

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Appointment

From: Nagle, Deborah [Nagle.Deborah@epa.gov]
Sent: 10/14/2020 5:51:27 PM
To: Nagle, Deborah [Nagle.Deborah@epa.gov]; Flaherty, Colleen [Flaherty.Colleen@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Ohanian, Edward [Ohanian.Edward@epa.gov]

Subject: GenX
Location: Microsoft Teams Meeting

Start: 10/15/2020 2:00:00 PM
End: 10/15/2020 2:50:00 PM
Show Time As: Busy

Required Attendees: Colleen Flaherty; Strong, Jamie; Miller, Gregory; Jacobs, Brittany; Ohanian, Edward (Ohanian.Edward@epa.gov)

Join Microsoft Teams Meeting

+ gton DC (Toll)

C **Ex. 6 Personal Privacy (PP)**

Local numbers | Reset PIN | Learn more about Teams | Meeting options

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Appointment

From: Jones, Samantha [Jones.Samantha@epa.gov]
Sent: 10/13/2020 4:57:19 PM
To: Jones, Samantha [Jones.Samantha@epa.gov]; Kraft, Andrew [Kraft.Andrew@epa.gov]; Davis, Allen [Davis.Allen@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Owens, Beth [Owens.Beth@epa.gov]; Lambert, Jason [Lambert.Jason@epa.gov]

Subject: GenX Uncertainty Write-Up Discussion
Location: Microsoft Teams Meeting: Ex. 6 Personal Privacy (PP)

Start: 10/28/2020 5:00:00 PM
End: 10/28/2020 6:00:00 PM
Show Time As: Busy

Required Attendees: Kraft, Andrew; Davis, Allen; Strong, Jamie; Miller, Gregory; Jacobs, Brittany; Owens, Beth; Lambert, Jason

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Join Microsoft Teams Meeting

Ex. 6 Personal Privacy (PP)

shington DC (Toll)

Local numbers | Reset PIN | Learn more about Teams | Meeting options

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Appointment

From: Strong, Jamie [Strong.Jamie@epa.gov]
Sent: 9/30/2020 5:21:41 PM
To: Strong, Jamie [Strong.Jamie@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Lindberg, Casey [Lindberg.Casey@epa.gov]

Subject: SDWA/GenX meeting (setting up w/Teams)
Location: Microsoft Teams Meeting

Start: 9/30/2020 6:00:00 PM
End: 9/30/2020 7:00:00 PM
Show Time As: Busy

Required Attendees: Miller, Gregory; Jacobs, Brittany; Lindberg, Casey

first half SDWA, second half GenX

Join Microsoft Teams Meeting

Ex. 6 Personal Privacy (PP) on DC (Toll)

Local numbers | Reset PIN | Learn more about Teams | Meeting options

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Appointment

From: Strong, Jamie [Strong.Jamie@epa.gov]
Sent: 9/30/2020 2:07:40 PM
To: Strong, Jamie [Strong.Jamie@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]

Subject: talk about ORD GenX comments

Start: 9/30/2020 6:30:00 PM
End: 9/30/2020 7:00:00 PM
Show Time As: Busy

Required Attendees: Miller, Gregory; Jacobs, Brittany

Appointment

From: Strong, Jamie [Strong.Jamie@epa.gov]
Sent: 10/1/2020 5:28:11 PM
To: Strong, Jamie [Strong.Jamie@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]

Subject: talk about GenX and PFBA
Location: Microsoft Teams Meeting

Start: 10/6/2020 5:00:00 PM
End: 10/6/2020 6:00:00 PM
Show Time As: Busy

Required Attendees: Miller, Gregory; Jacobs, Brittany

Sorry it's the only time I have

Join Microsoft Teams Meeting

ton DC (Toll)

Ex. 6 Personal Privacy (PP)

Local numbers | Reset PIN | Learn more about Teams | Meeting options

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Appointment

From: Behl, Betsy [Behl.Betsy@epa.gov]
Sent: 9/8/2020 12:22:17 PM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]; Ohanian, Edward [Ohanian.Edward@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]

Subject: Prep for GenX
Location: Microsoft Teams Meeting

Start: 9/9/2020 2:00:00 PM
End: 9/9/2020 3:00:00 PM
Show Time As: Busy

Required Attendees: Strong, Jamie; Ohanian, Edward; Miller, Gregory; Jacobs, Brittany

---

Join Microsoft Teams Meeting

Ex. 6 Personal Privacy (PP) Washington DC (Toll)

Local numbers | Reset PIN | Learn more about Teams | Meeting options

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Appointment

From: Bertrand, Charlotte [Bertrand.Charlotte@epa.gov]
Sent: 9/1/2020 7:50:15 PM
To: Bertrand, Charlotte [Bertrand.Charlotte@epa.gov]; McDonough, Owen [mcdonough.owen@epa.gov]; Nagle, Deborah [Nagle.Deborah@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]
CC: Weyer, Erica [weyer.erica@epa.gov]; Aguirre, Janita [Aguirre.Janita@epa.gov]; Reed, Kristen [Reed.Kristen@epa.gov]; Ohanian, Edward [Ohanian.Edward@epa.gov]

Subject: GenX Follow-up Questions
Location: Microsoft Teams Meeting

Start: 9/10/2020 5:45:00 PM
End: 9/10/2020 6:30:00 PM
Show Time As: Busy

Required Attendees: McDonough, Owen; Nagle, Deborah; Jacobs, Brittany; Strong, Jamie; Behl, Betsy; Miller, Gregory
Optional Attendees: Weyer, Erica; Aguirre, Janita; Reed, Kristen; Ohanian, Edward (Ohanian.Edward@epa.gov)

Purpose: To follow-up on the questions from GenX briefing, per Charlotte's request

---

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Local numbers | Reset PIN | Learn more about Teams | Meeting options

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Appointment

From: Strong, Jamie [Strong.Jamie@epa.gov]
Sent: 8/13/2020 5:31:27 PM
To: Strong, Jamie [Strong.Jamie@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]

Subject: skype link for genx meeting
Location: Skype Meeting

Start: 8/13/2020 5:30:00 PM
End: 8/13/2020 6:00:00 PM
Show Time As: Tentative

Required Attendees: Jacobs, Brittany; Miller, Gregory; Behl, Betsy

---

Join Skype Meeting

Trouble Joining? Try Skype Web App

Join by phone

Toll number: Ex. 6 Personal Privacy (PP) (United States)
Find a local number

Conference ID: Ex. 6 Personal Privacy (PP)
Forgot your dial-in PIN? | Help

Appointment

From: Strong, Jamie [Strong.Jamie@epa.gov]
Sent: 8/13/2020 11:30:33 AM
To: Strong, Jamie [Strong.Jamie@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]

Subject: talk about GenX

Start: 8/13/2020 5:30:00 PM
End: 8/13/2020 6:00:00 PM
Show Time As: Busy

Required Attendees: Behl, Betsy; Jacobs, Brittany; Miller, Gregory

Appointment

From: Behl, Betsy [Behl.Betsy@epa.gov]
Sent: 8/4/2020 4:09:34 PM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Rodgers-Jenkins, Crystal [Rodgers-Jenkins.Crystal@epa.gov]; Burneson, Eric [Burneson.Eric@epa.gov]; McLain, Jennifer L. [McLain.Jennifer@epa.gov]; Nagle, Deborah [Nagle.Deborah@epa.gov]

Subject: GenX Update
Attachments: OW IO Briefing- GenX chemicals tox assessments update 081220.docx
Location: Microsoft Teams Meeting

Start: 8/11/2020 5:00:00 PM
End: 8/11/2020 6:00:00 PM
Show Time As: Busy

Required Attendees: Miller, Gregory; Strong, Jamie; Jacobs, Brittany; Rodgers-Jenkins, Crystal; Burneson, Eric; McLain, Jennifer L.; Nagle, Deborah

---

Join Microsoft Teams Meeting

Ex. 6 Personal Privacy (PP)

es, Washington DC (Toll)

Local numbers | Reset PIN | Learn more about Teams | Meeting options

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Appointment

From: Owscheduling [Owscheduling@epa.gov]
Sent: 8/3/2020 7:09:23 PM
To: Owscheduling [Owscheduling@epa.gov]; Ross, David P [ross.davidp@epa.gov]; Bertrand, Charlotte [Bertrand.Charlotte@epa.gov]; McDonough, Owen [mcdonough.owen@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]
CC: Weyer, Erica [weyer.erica@epa.gov]; Nagle, Deborah [Nagle.Deborah@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Aguirre, Janita [Aguirre.Janita@epa.gov]

Subject: GenX Update
Attachments: Request 112 - GenX Update.pdf; OW IO Briefing- GenX chemicals tox assessments update 081220.docx
Location: Call in 202-991-0477 passcode 8744472

Start: 8/12/2020 3:00:00 PM
End: 8/12/2020 4:00:00 PM
Show Time As: Busy

Required Attendees: Ross, David P; Bertrand, Charlotte; McDonough, Owen; Strong, Jamie; Jacobs, Brittany; Miller, Gregory
Optional Attendees: Weyer, Erica; Nagle, Deborah; Behl, Betsy; Aguirre, Janita

Appointment

From: Strong, Jamie [Strong.Jamie@epa.gov]
Sent: 8/3/2020 2:55:38 PM
To: Strong, Jamie [Strong.Jamie@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]

Subject: genx schedule
Location: Skype Meeting

Start: 8/3/2020 7:00:00 PM
End: 8/3/2020 7:30:00 PM
Show Time As: Busy

Required Attendees: Miller, Gregory; Jacobs, Brittany

Join Skype Meeting

Trouble Joining? Try Skype Web App

Join by phone

Toll number: Ex. 6 Personal Privacy (PP) English (United States)

Find a local number

Conference ID: Ex. 6 Personal Privacy (PP)

Forgot your dial-in PIN? | Help

Appointment

From: Strong, Jamie [Strong.Jamie@epa.gov]
Sent: 6/18/2020 7:10:49 PM
To: Strong, Jamie [Strong.Jamie@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]

Subject: GenX RTC discussion
Location: Skype Meeting

Start: 6/22/2020 6:00:00 PM
End: 6/22/2020 7:00:00 PM
Show Time As: Busy

Required Attendees: Jacobs, Brittany; Miller, Gregory

Join Skype Meeting

Trouble Joining? Try Skype Web App

Join by phone

Toll number: +Ex. 6 Personal Privacy (PP) English (United States)

Find a local number

Conference ID: Ex. 6 Personal Privacy (PP)

Forgot your dial-in PIN? | Help

Appointment

From: Owens, Beth [Owens.Beth@epa.gov]
Sent: 6/29/2020 2:37:25 PM
To: Owens, Beth [Owens.Beth@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Shams, Dahnish [Shams.Dahnish@epa.gov]; Laurie Waite [Laurie.Waite@erg.com]

Subject: GenX Chemicals 2nd EPR - ERG Meeting
Location: Microsoft Teams Meeting

Start: 7/21/2020 3:30:00 PM
End: 7/21/2020 4:00:00 PM
Show Time As: Busy

Required Attendees: Strong, Jamie; Miller, Gregory; Jacobs, Brittany; Shams, Dahnish; Laurie Waite

Discuss steps to initiate 2nd EPR for Toxicity Assessment of GenX Chemicals

---

Join Microsoft Teams Meeting

Ex. 6 Personal Privacy (PP) Washington DC (Toll)

Local numbers | Reset PIN | Learn more about Teams | Meeting options

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Appointment

From: Strong, Jamie [Strong.Jamie@epa.gov]
Sent: 6/17/2020 12:09:15 PM
To: Strong, Jamie [Strong.Jamie@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]

Subject: GenX RTC follow up
Location: Skype Meeting

Start: 6/18/2020 6:00:00 PM
End: 6/18/2020 7:00:00 PM
Show Time As: Busy

Required Attendees: Jacobs, Brittany; Miller, Gregory

Join Skype Meeting

Trouble Joining? Try Skype Web App

Join by phone

Toll number: +1 Ex. 6 Personal Privacy (PP) English (United States)
Find a local number

Conference ID: Ex. 6 Personal Privacy (PP)
Forgot your dial-in PIN? | Help

Appointment

From: Strong, Jamie [Strong.Jamie@epa.gov]
Sent: 6/16/2020 12:15:12 PM
To: Strong, Jamie [Strong.Jamie@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]

Subject: go through GenX
Location: Skype Meeting

Start: 6/16/2020 6:30:00 PM
End: 6/16/2020 7:30:00 PM
Show Time As: Busy

Required Attendees: Jacobs, Brittany; Miller, Gregory

Join Skype Meeting

Trouble Joining? Try Skype Web App

Join by phone

Toll number: Ex. 6 Personal Privacy (PP) English (United States)

Find a local number

Conference ID: 3052412

Forgot your dial-in PIN? | Help

Appointment

From: Strong, Jamie [Strong.Jamie@epa.gov]
Sent: 6/11/2020 11:50:45 AM
To: Strong, Jamie [Strong.Jamie@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Lindberg, Casey [Lindberg.Casey@epa.gov]

Subject: GenX comments discussion
Location: Skype Meeting

Start: 6/11/2020 6:00:00 PM
End: 6/11/2020 7:00:00 PM
Show Time As: Busy

Required Attendees: Jacobs, Brittany; Miller, Gregory

Join Skype Meeting

Trouble Joining? Try Skype Web App

Join by phone

Toll number: Ex. 6 Personal Privacy (PP) English (United States)

Find a local number

Conference ID: 3 Ex. 6 Personal Privacy (PP)

Forgot your dial-in PIN? | Help

Appointment

From: Strong, Jamie [Strong.Jamie@epa.gov]
Sent: 6/9/2020 7:01:56 PM
To: Strong, Jamie [Strong.Jamie@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]

Subject: continued discussion on GenX
Location: Skype Meeting

Start: 6/10/2020 7:00:00 PM
End: 6/10/2020 8:00:00 PM
Show Time As: Busy

Required Attendees: Jacobs, Brittany; Miller, Gregory

Join Skype Meeting

Trouble Joining? Try Skype Web App

Join by phone

Toll number: Ex. 6 Personal Privacy (PP) English (United States)

Find a local number

Conference ID: Ex. 6 Personal Privacy (PP)

Forgot your dial-in PIN? | Help

Appointment

From: Strong, Jamie [Strong.Jamie@epa.gov]
Sent: 6/9/2020 6:37:44 PM
To: Strong, Jamie [Strong.Jamie@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]

Subject: Discuss comments on PF for GenX
Location: Skype Meeting

Start: 6/12/2020 12:30:00 PM
End: 6/12/2020 1:30:00 PM
Show Time As: Busy

Required Attendees: Miller, Gregory; Jacobs, Brittany; Behl, Betsy

---

Join Skype Meeting

Trouble Joining? Try Skype Web App

Join by phone

Toll number: Ex. 6 Personal Privacy (PP) ber) English (United States)

Find a local number

Conference ID: Ex. 6 Personal Privacy (PP)

Forgot your dial-in PIN? | Help

Betsy,
We need to discuss your comments on the conceptual model and PF part of GenX. We modeled what was done in PFOA and PFOS (specifically content). We didn't receive comments on this section and there was much discussion previously about these pieces.

Appointment

From: Nagle, Deborah [Nagle.Deborah@epa.gov]
Sent: 6/8/2020 6:38:22 PM
To: Nagle, Deborah [Nagle.Deborah@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]
CC: Weyer, Erica [weyer.erica@epa.gov]

Subject: Update on Revisions to the GenX Chemicals Assessment
Attachments: Briefing-draft GenX chemicals tox assessment July 6 2020.docx
Location: Microsoft Teams Meeting

Start: 7/6/2020 7:00:00 PM
End: 7/6/2020 8:00:00 PM
Show Time As: Busy

Required Attendees: Strong, Jamie; Jacobs, Brittany; Miller, Gregory; Behl, Betsy
Optional Attendees: Weyer, Erica

Purpose: Informational

Join Skype Meeting

Trouble Joining? Try Skype Web App

Join by phone

Toll number: Ex. 6 Personal Privacy (PP) English (United States)

Find a local number

Conference ID: 9443247
Forgot your dial-in PIN? | Help

Appointment

From: Behl, Betsy [Behl.Betsy@epa.gov]
Sent: 6/2/2020 2:41:56 PM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]

Subject: Discuss GenX
Location: Microsoft Teams Meeting

Start: 6/3/2020 1:30:00 PM
End: 6/3/2020 2:00:00 PM
Show Time As: Busy

Required Attendees: Strong, Jamie; Miller, Gregory; Jacobs, Brittany

---

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Appointment

From: Strong, Jamie [Strong.Jamie@epa.gov]
Sent: 5/28/2020 12:00:49 PM
To: Strong, Jamie [Strong.Jamie@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]

Subject: GenX discussion

Start: 6/2/2020 1:30:00 PM
End: 6/2/2020 2:30:00 PM
Show Time As: Busy

Required Attendees: Miller, Gregory; Jacobs, Brittany

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Appointment

From: Strong, Jamie [Strong.Jamie@epa.gov]
Sent: 6/2/2020 2:03:26 PM
To: Strong, Jamie [Strong.Jamie@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]

Subject: GenX discuss revisions/comments
Location: Skype Meeting

Start: 6/9/2020 6:00:00 PM
End: 6/9/2020 7:00:00 PM
Show Time As: Busy

Required Attendees: Miller, Gregory; Jacobs, Brittany

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Let me know if there is a better time (nap). I am pretty open all day.

Appointment

From: Strong, Jamie [Strong.Jamie@epa.gov]
Sent: 5/13/2020 12:16:00 PM
To: Strong, Jamie [Strong.Jamie@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]

Subject: GenX next steps
Location: Skype Meeting

Start: 5/18/2020 11:30:00 AM
End: 5/18/2020 12:30:00 PM
Show Time As: Busy

Required Attendees: Jacobs, Brittany; Miller, Gregory

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Conference ID: 3052412
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---

1. incorporating edits
2. draft charge for 2nd peer review
3. developing briefing for managers

Appointment

From: Strong, Jamie [Strong.Jamie@epa.gov]
Sent: 4/27/2020 6:51:20 PM
To: Strong, Jamie [Strong.Jamie@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]

Subject: touch base GenX
Location: Skype Meeting

Start: 4/28/2020 12:00:00 PM
End: 4/28/2020 12:30:00 PM
Show Time As: Busy

Required Attendees: Miller, Gregory; Jacobs, Brittany

Join Skype Meeting

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Appointment

From: Strong, Jamie [Strong.Jamie@epa.gov]
Sent: 4/21/2020 11:42:05 AM
To: Strong, Jamie [Strong.Jamie@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]

Subject: GenX touch base
Location: Skype Meeting

Start: 4/22/2020 6:00:00 PM
End: 4/22/2020 7:00:00 PM
Show Time As: Busy

Required Attendees: Miller, Gregory; Jacobs, Brittany

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Conference ID: Ex. 6 Personal Privacy (PP)

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---

just blocking a chunk…we can go through any issues we have left.

Appointment

From: Behl, Betsy [Behl.Betsy@epa.gov]
Sent: 4/22/2021 2:43:10 PM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Jones, Samantha [Jones.Samantha@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Lambert, Jason [Lambert.Jason@epa.gov]; Owens, Beth [Owens.Beth@epa.gov]; Lavoie, Emma [Lavoie.Emma@epa.gov]; Euling, Susan [Euling.Susan@epa.gov]
CC: Thayer, Kris [thayer.kris@epa.gov]; Kraft, Andrew [Kraft.Andrew@epa.gov]; Shirke, Avanti [shirke.avanti@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]

Subject: Monthly PFAS toxicity assessment Meeting
Attachments: Untitled Attachment; Monthly Meeting on PFAS toxicity assessments; Untitled Attachment; Untitled Attachment; Untitled Attachment; Untitled Attachment
Location: Microsoft Teams Meeting

Start: 5/5/2021 1:00:00 PM
End: 5/5/2021 2:00:00 PM
Show Time As: Busy

Recurrence: Monthly
the first Wednesday of every 1 month(s) from 9:00 AM to 10:00 AM
Required Attendees: Behl, Betsy; Jones, Samantha; Miller, GregoryG; Jacobs, Brittany; Lambert, Jason; Owens, Beth; Lavoie, Emma; Euling, Susan
Optional Attendees: Thayer, Kris; Kraft, Andrew; Shirke, Avanti; Strong, Jamie

---

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Appointment

From: Euling, Susan [Euling.Susan@epa.gov]
Sent: 4/26/2021 1:49:01 PM
To: Euling, Susan [Euling.Susan@epa.gov]; DAnglada, Lesley [DAnglada.Lesley@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]; Akhter, Shamima [Akhter.Shamima@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]; Soares, Barbara [soares.barbara@epa.gov]; Lindberg, Casey [Lindberg.Casey@epa.gov]; Ravenscroft, John [Ravenscroft.John@epa.gov]; Young, Melanie [Young.Melanie@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Cunningham, Kelly [cunningham.kelly@epa.gov]; Keel, Adrienne [keel.adrienne@epa.gov]

Subject: HRAB check in
Attachments: Untitled Attachment; Untitled Attachment; Untitled Attachment; Untitled Attachment; Untitled Attachment; Untitled Attachment; Untitled Attachment; Untitled Attachment; Untitled Attachment; Untitled Attachment; Untitled Attachment; Untitled Attachment; HRAB check in; Untitled Attachment; Untitled Attachment; Untitled Attachment; Untitled Attachment; Untitled Attachment
Location: Microsoft Teams Meeting

Start: 4/27/2021 3:30:00 PM
End: 4/27/2021 4:00:00 PM
Show Time As: Busy

Recurrence: Weekly
every Tuesday from 11:30 AM to 12:00 PM
Required Attendees: DAnglada, Lesley; Miller, GregoryG; Akhter, Shamima; Donohue, Joyce; Soares, Barbara; Lindberg, Casey; Ravenscroft, John; Young, Melanie; Jacobs, Brittany; Cunningham, Kelly; Keel, Adrienne

---

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Appointment

From: Jacobs, Brittany [jacobs.brittany@epa.gov]
Sent: 5/13/2021 4:53:47 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]

Subject: Chat about GenX
Location: Microsoft Teams Meeting

Start: 5/18/2021 3:00:00 PM
End: 5/18/2021 3:30:00 PM
Show Time As: Busy

Required Attendees: Miller, GregoryG

You can just call me too , whichever you prefer

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Appointment

From: Euling, Susan [Euling.Susan@epa.gov]
Sent: 5/18/2021 2:17:10 PM
To: Euling, Susan [Euling.Susan@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]; Soares, Barbara [soares.barbara@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Lindberg, Casey [Lindberg.Casey@epa.gov]
CC: Flaherty, Colleen [Flaherty.Colleen@epa.gov]

Subject: Discussion of budget FY21 and 22 PFAS
Location: Microsoft Teams Meeting

Start: 5/18/2021 6:00:00 PM
End: 5/18/2021 6:30:00 PM
Show Time As: Busy

Required Attendees: Miller, GregoryG; Soares, Barbara; Jacobs, Brittany; Lindberg, Casey
Optional Attendees: Flaherty, Colleen

To finalize –

	Activity	FY21 $	FY21 FTE	FY22 $	FY22 FTE
EAD	PFAS incl. Methods, Detailed Study, rulemaking	Ex. 5 Deliberative Process (DP)			
HECD	Ecological Risk Ambient Water Quality Criteria for PFOA and PFOS				
HECD	Human Health Ambient Water Quality Criteria for PFOA and PFOS				
HECD	SDWA Health Effects Support (PFOA, PFOS, GenX chemicals)				
SHPD	Human Health Monitoring through Fish Studies and Evaluations				
	Total				

Note: FTE rate = $160k per.

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Appointment

From: Jacobs, Brittany [jacobs.brittany@epa.gov]
Sent: 6/3/2021 2:34:32 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Euling, Susan [Euling.Susan@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]

Subject: GenX Assessment Check-In
Location: Microsoft Teams Meeting

Start: 6/9/2021 3:00:00 PM
End: 6/9/2021 4:00:00 PM
Show Time As: Busy

Required Attendees: Euling, Susan; Miller, GregoryG

Scheduling this for us to touch base and discuss three issues relating to the GenX assessment. I am hoping to add some materials for discussion later on, but want to get this on the calendar before the time disappears.

- Subchronic to chronic uncertainty factor
  - Rationale of Agency reviewers' support of subchronic to chronic
    - ORD comments
  - Focus in on dissenting peer reviewer comments
- Half life data in workers
  - Did Betsy/Sue make calls to Chemours and ECHA?
  - Comparison of PFBS data and the GenX half life study
- Systematic Review
  - Have we talked to ORD?
  - Plan for revision

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Appointment

From: Jacobs, Brittany [jacobs.brittany@epa.gov]
Sent: 6/10/2021 3:10:47 AM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Euling, Susan [Euling.Susan@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]

Subject: GenX follow-up discussion UFS
Location: Microsoft Teams Meeting

Start: 6/15/2021 2:00:00 PM
End: 6/15/2021 3:00:00 PM
Show Time As: Busy

Required Attendees: Euling, Susan; Miller, GregoryG

<!--[if lte mso 15 || CheckWebRef]-->

Jacobs, Brittany has shared a OneDrive for Business file with you. To view it, click the link below.

GenX chemicals_subchronic to chronic UF background info.docx

<!--[endif]-->

Ex. 5 Deliberative Process (DP) See the attachment for some materials to consider for our discussion.

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Appointment

From: Euling, Susan [Euling.Susan@epa.gov]
Sent: 7/7/2021 6:48:13 PM
To: Euling, Susan [Euling.Susan@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]; Weyer, Erica [weyer.erica@epa.gov]

Subject: GenX schedule revisit
Attachments: GenX chemicals tox assessment SCHEDULE 070621 BB.docx
Location: Microsoft Teams Meeting

Start: 7/8/2021 1:30:00 PM
End: 7/8/2021 2:00:00 PM
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Required Attendees: Jacobs, Brittany; Miller, GregoryG; Weyer, Erica

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Appointment

From: Jacobs, Brittany [jacobs.brittany@epa.gov]
Sent: 7/8/2021 7:33:29 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]; Brinkerhoff, Chris [Brinkerhoff.Chris@epa.gov]

Subject: Chat about GenX Peer Reviewer Comment
Location: Microsoft Teams Meeting

Start: 7/9/2021 3:00:00 PM
End: 7/9/2021 3:30:00 PM
Show Time As: Busy

Required Attendees: Miller, GregoryG; Brinkerhoff, Chris

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Appointment

From: Behl, Betsy [Behl.Betsy@epa.gov]
Sent: 7/9/2021 4:58:48 PM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Euling, Susan [Euling.Susan@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]

Subject: genX schedule more thoughts
Location: Microsoft Teams Meeting

Start: 7/9/2021 5:00:00 PM
End: 7/9/2021 5:30:00 PM
Show Time As: Busy

Required Attendees: Euling, Susan; Miller, GregoryG; Brittany Jacobs

GenX chemicals tox assessment SCHEDULE 070621 BB sye bbedits.docx

Sharing this document. We can talk more on Monday, but I had some additional thoughts on how to streamline and decisions I cant make

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Appointment

From: Euling, Susan [Euling.Susan@epa.gov]
Sent: 7/13/2021 5:11:24 PM
To: Euling, Susan [Euling.Susan@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]

Subject: GenX 1 pager
Location: Microsoft Teams Meeting

Start: 7/13/2021 6:30:00 PM
End: 7/13/2021 7:00:00 PM
Show Time As: Busy

Required Attendees: Jacobs, Brittany; Miller, GregoryG

If needed – let's see what we can do via email.

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Appointment

From: Nagle, Deborah [Nagle.Deborah@epa.gov]
Sent: 7/12/2021 3:39:32 PM
To: Nagle, Deborah [Nagle.Deborah@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Wood, Robert [Wood.Robert@epa.gov]; Euling, Susan [Euling.Susan@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]

Subject: Proposed GenX schedule
Location: Microsoft Teams Meeting

Start: 7/13/2021 12:30:00 PM
End: 7/13/2021 1:00:00 PM
Show Time As: Busy

Required Attendees: Betsy Behl; Robert Wood; Euling, Susan; Jacobs, Brittany; Miller, GregoryG

<!--[if lte mso 15 || CheckWebRef]-->

Snowden, Belinda has shared a OneDrive for Business file with you. To view it, click the link below.

GenX chemicals tox assessment SCHEDULE 071221.docx

<!--[endif]-->

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Appointment

From: Euling, Susan [Euling.Susan@epa.gov]
Sent: 7/2/2021 1:20:08 PM
To: Euling, Susan [Euling.Susan@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]
CC: Miller, GregoryG [Miller.Gregory@epa.gov]

Subject: GenX discusssion
Location: Microsoft Teams Meeting

Start: 7/6/2021 4:00:00 PM
End: 7/6/2021 4:30:00 PM
Show Time As: Busy

Required Attendees: Behl, Betsy; Jacobs, Brittany
Optional Attendees: Miller, GregoryG

Agenda:
1)
2)

Ex. 5 Deliberative Process (DP)

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Appointment

From: Behl, Betsy [Behl.Betsy@epa.gov]
Sent: 7/22/2021 7:25:11 PM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Euling, Susan [Euling.Susan@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]

Subject: Discuss GenX
Location: Microsoft Teams Meeting

Start: 7/23/2021 12:30:00 PM
End: 7/23/2021 1:00:00 PM
Show Time As: Busy

Required Attendees: Euling, Susan; Jacobs, Brittany; Miller, GregoryG

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Appointment

From: Jacobs, Brittany [jacobs.brittany@epa.gov]
Sent: 7/6/2021 2:44:24 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Euling, Susan [Euling.Susan@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]

Subject: GenX Check-Ins: Modeling Discussion
Location: Microsoft Teams Meeting

Start: 7/8/2021 6:00:00 PM
End: 7/8/2021 6:30:00 PM
Show Time As: Busy

Required Attendees: Euling, Susan; Miller, GregoryG

Hello,

I am scheduling some GenX check-ins for us to discuss issues I identify while responding to the peer review comments and in finalizing the document. Our schedules are pretty packed, so I'll aim for half hour discussions weekly and try to provide materials in advance for discussion. I will add the response to comments doc and assessment I am working off of once my Outlook cooperates.

For this first meeting, I want to discuss a path forward for responding to this peer reviewer's comment:
Selection of Dupont-18405-1037, 2010 for RfD derivation is scientifically justified and clearly described in the current toxicity assessment, as it was in 2018. Confidence in the study is only increased by the NTP PWG's review of liver pathology, as it is essentially confirmatory of the original findings. Also, despite an adverse response (i.e., critical effect) being defined by a constellation of lesions rather than a single one, the resulting PODHED changed very little from 2018 (i.e., it was reduced from 0.023 to 0.01 mg/kg/day). It is also noteworthy that the reduction in PODHED remained minor despite the change from male to female mice as its basis. Though I support the use of Dupont's reproductive/developmental study for RfD derivation, the new definition of adversity raises an issue for dose-response modeling. Based on the slide review worksheets in Appendix E, several mice were diagnosed by the NTP PWG with varying degrees of cytoplasmic alteration only, or in some cases, cytoplasmic alteration accompanied by mixed cell infiltration. In the absence of necrosis or apoptosis, it would seem appropriate to consider these diagnoses as adaptive and non-adverse (as was done in Table 11 where 0.5 mg/kg/day was determined to be a NOAEL in Dupont's 90-day mouse study, despite cytoplasmic alteration in 10/10 males). However, the dose-response data modeled in Appendix F suggest otherwise (e.g., 24/24 female mice in the high-dose group were selected for dose-response modeling, yet animal numbers 5027, 5033 and 5035 were diagnosed with mild cytoplasmic alteration and nothing more). Shouldn't the absence of hepatocellular necrosis or apoptosis disqualify an animal from inclusion in dose-response modeling? Admittedly, as the slide review worksheets do not indicate which animals were in a given dose group, this question may be for naught.

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Appointment

From: Euling, Susan [Euling.Susan@epa.gov]
Sent: 7/14/2021 5:05:04 PM
To: Euling, Susan [Euling.Susan@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]

Subject: HRAB one-on-one: Brittany
Location: Microsoft Teams Meeting

Start: 7/15/2021 1:00:00 PM
End: 7/15/2021 1:30:00 PM
Show Time As: Busy

Recurrence: Weekly
every Thursday from 9:00 AM to 9:30 AM
Required Attendees: Jacobs, Brittany; Miller, GregoryG

Greg, jump on for the 1st agenda item!

Agenda:

1) GenX discussion with Sue Fenton – Greg and Brittany
2) PFOA/S
3) GenX
4) DBP TO (ICF)
5) HA technical directive (TT)
6) Other?

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Appointment

From: Behl, Betsy [Behl.Betsy@epa.gov]
Sent: 7/26/2021 3:46:11 PM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Euling, Susan [Euling.Susan@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; aic7@CDC.gov [aic7@cdc.gov]

Subject: GenX plans for monitoring by NHANES
Attachments: Calafat19.pdf
Location: Microsoft Teams Meeting

Start: 8/2/2021 3:30:00 PM
End: 8/2/2021 4:00:00 PM
Show Time As: Busy

Required Attendees: Euling, Susan; Miller, GregoryG; Jacobs, Brittany; aic7@cdc.gov

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Appointment

From: Euling, Susan [Euling.Susan@epa.gov]
Sent: 9/1/2021 8:26:55 PM
To: Euling, Susan [Euling.Susan@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]

Subject: #3 GenX RTC working mtg
Location: Microsoft Teams Meeting

Start: 9/7/2021 4:30:00 PM
End: 9/7/2021 5:00:00 PM
Show Time As: Tentative

Required Attendees: Miller, GregoryG; Jacobs, Brittany

Now Betsy has put the HECD mtg at 12-12:30pm…so this has shrunk. We will work fast!

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Appointment

From: Euling, Susan [Euling.Susan@epa.gov]
Sent: 9/1/2021 1:51:09 PM
To: Euling, Susan [Euling.Susan@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]

Subject: GenX discussion
Location: Microsoft Teams Meeting

Start: 9/1/2021 5:30:00 PM
End: 9/1/2021 6:00:00 PM
Show Time As: Busy

Required Attendees: Behl, Betsy; Miller, GregoryG; Jacobs, Brittany

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Appointment

From: Euling, Susan [Euling.Susan@epa.gov]
Sent: 8/31/2021 4:58:21 PM
To: Euling, Susan [Euling.Susan@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]

Subject: Mtg #2: GenX RTC public
Attachments: GenX Assessment Resp to Public Comments_Tech Edit_7.27.2020 sye review bb.docx
Location: Microsoft Teams Meeting

Start: 9/1/2021 7:00:00 PM
End: 9/1/2021 8:00:00 PM
Show Time As: Busy

Required Attendees: Jacobs, Brittany; Miller, GregoryG

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Appointment

From: Euling, Susan [Euling.Susan@epa.gov]
Sent: 8/31/2021 4:57:57 PM
To: Euling, Susan [Euling.Susan@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]

Subject: Mtg #1: GenX resolve comments working mtg
Attachments: GenX Assessment Resp to Public Comments_Tech Edit_7.27.2020 sye review bb.docx
Location: Microsoft Teams Meeting

Start: 8/31/2021 7:30:00 PM
End: 8/31/2021 8:30:00 PM
Show Time As: Busy

Required Attendees: Miller, GregoryG; Jacobs, Brittany

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Appointment

From: Behl, Betsy [Behl.Betsy@epa.gov]
Sent: 9/20/2021 10:31:07 PM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Small, Matthew [Small.Matthew@epa.gov]; roger.brewer@doh.hawaii.gov; diana.felton@doh.hawaii.gov; Wilson, Patrick [Wilson.Patrick@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]

Subject: update for HI on EPA final GenX toxicity assessment
Location: Microsoft Teams Meeting

Start: 9/23/2021 8:00:00 PM
End: 9/23/2021 9:00:00 PM
Show Time As: Busy

Required Attendees: Small, Matthew; roger.brewer@doh.hawaii.gov; diana.felton@doh.hawaii.gov; Wilson, Patrick; Brittany Jacobs; Miller, GregoryG

Dear colleagues from Hawaii,
Please join us for a briefing on the final toxicity assessment for GenX Chemicals, highlighting changes in response to public and peer review comments. We are holding these meetings only for states who have developed guidelines for GenX chemicals so that scientists can understand the nature of the changes we made. This outreach is specifically designed for those familiar with the toxicity database for GenX chemicals. The assessment itself is currently embargoed and we anticipate its release this fall. After it is released we plan a series of webinars to share results more broadly.
Please do not forward this meeting invitation further.

Thank you for your interest and we look forward to speaking with you.

Betsy
Elizabeth (Betsy) Behl, Director Health and Ecological Criteria Division,
Office of Science and Technology, Office of Water, EPA
Office: 202-566-0788
Cell: 202-251-
4747

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Appointment

From: Behl, Betsy [Behl.Betsy@epa.gov]
Sent: 9/20/2021 10:37:18 PM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Gloria.Post@dep.nj.gov; Mingzhu.fang@dep.nj.gov; DAgostino, Daniel [DAgostino.Daniel@epa.gov]; Olsen, Marian [Olsen.Marian@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]; Pachkowski, Brian [brian.pachkowski@dep.nj.gov]; Ash, Christine [Ash.Christine@epa.gov]; Boucher, Aimee [Boucher.Aimee@epa.gov]

Subject: update for NJ on EPA final GenX toxicity assessment
Location: Microsoft Teams Meeting

Start: 9/23/2021 3:00:00 PM
End: 9/23/2021 4:00:00 PM
Show Time As: Busy

Required Attendees: Post, Gloria (DEP); Mingzhu.fang@dep.nj.gov; DAgostino, Daniel; Olsen, Marian; Jacobs, Brittany; Miller, GregoryG; brian.pachkowski@dep.nj.gov; Ash, Christine; Boucher, Aimee

Dear colleagues from New Jersey,
Please join us for a briefing on the final toxicity assessment for GenX Chemicals, highlighting changes in response to public and peer review comments. We are holding this meeting only for states who have developed guidelines for GenX chemicals so that scientists can understand the nature of the changes we made. This outreach is specifically designed for those familiar with the toxicity database for GenX chemicals. The assessment itself is currently embargoed and we anticipate its release this fall. After it is released we plan a series of webinars to share results more broadly.
Please do not forward this meeting invitation further.

Thank you for your interest and we look forward to speaking with you.

Betsy
Elizabeth (Betsy) Behl, Director Health and Ecological Criteria Division,
Office of Science and Technology, Office of Water, EPA
Office: 202-566-0788

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Appointment

From: Behl, Betsy [Behl.Betsy@epa.gov]
Sent: 9/20/2021 10:57:54 PM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Harris, Kimberly [harris.kimberly@epa.gov]; Carol.Hawbaker@illinois.gov; Matt Prater [mprater@idem.in.gov]; Jennifer Gray [grayj@michigan.gov]; wildfange@michigan.gov; Groetsch, Kory J. (DHHS) [Groetschk@michigan.gov]; Amy.Klei@epa.ohio.gov; SarahP.Yang@dhs.wisconsin.gov; Braverman, Carole [braverman.carole@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]; Bailey, Jordan (DHHS-Contractor) [BaileyJ17@michigan.gov]

Subject: update for IL, IN, MI, OH, WI on EPA final GenX toxicity assessment
Location: Microsoft Teams Meeting

Start: 9/24/2021 1:00:00 PM
End: 9/24/2021 2:00:00 PM
Show Time As: Busy

Required Attendees: Harris, Kimberly; Carol.Hawbaker@illinois.gov; mprater@idem.in.gov; grayj@michigan.gov; wildfange@michigan.gov; Groetschk@michigan.gov; Amy.Klei@epa.ohio.gov; SarahP.Yang@dhs.wisconsin.gov; Braverman, Carole; Jacobs, Brittany; Miller, GregoryG; Bailey, Jordan (DHHS-Contractor)

Dear colleagues from Illinois, Indiana, Michigan, Ohio, and Wisconsin,
Please join us for a briefing on the final toxicity assessment for GenX Chemicals, highlighting changes in response to public and peer review comments. We are holding this meeting only for states who have developed guidelines for GenX chemicals so that scientists can understand the nature of the changes we made. This outreach is specifically designed for those familiar with the toxicity database for GenX chemicals. The assessment itself is currently embargoed and we anticipate its release this fall. After it is released we plan a series of webinars to share results more broadly.
Please do not forward this meeting invitation further.

Thank you for your interest and we look forward to speaking with you.

Betsy
Elizabeth (Betsy) Behl, Director Health and Ecological Criteria Division,
Office of Science and Technology, Office of Water, EPA
Office: 202-566-0788
Cell: Ex. 6 Personal Privacy (PP)

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Appointment

From: Euling, Susan [Euling.Susan@epa.gov]
Sent: 9/14/2021 7:26:34 PM
To: Euling, Susan [Euling.Susan@epa.gov]; gaz5@cdc.gov; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]; Soares, Barbara [soares.barbara@epa.gov]; hga0@cdc.gov
CC: Buser, Melanie (ATSDR/OAD/OIA) [wyf9@cdc.gov]; Ruiz, Patricia (ATSDR/DTHHS/OD) [doz8@cdc.gov]; Prussia, Andrew James (ATSDR/OAD/OIA) [xby2@cdc.gov]

Subject: ATSDR-EPA discussion of EPA's Toxicity Assessment for GenX chemicals
Attachments: 091921 EPA Final Toxicity Assessment for GenX chems briefing ATSDR DO NOT DISTRIBUTE.pdf
Location: Microsoft Teams Meeting

Start: 9/23/2021 1:00:00 PM
End: 9/23/2021 2:00:00 PM
Show Time As: Busy

Required Attendees: gaz5@cdc.gov; Jacobs, Brittany; Miller, GregoryG; Behl, Betsy; Donohue, Joyce; Soares, Barbara; Abadin, Henry (ATSDR/DTHHS/ETB)
Optional Attendees: Buser, Melanie (ATSDR/OAD/OIA); Ruiz, Patricia (ATSDR/OAD/OIA); Prussia, Andrew James (ATSDR/OAD/OIA)

This meeting will be an opportunity for ATSDR to provide verbal comments on the pre-publication version of EPA's final toxicity assessment for GenX chemicals.

We look forward to your valuable input.

We request that you please ***DO NOT DISTRIBUTE, CITE, OR QUOTE*** the briefing slides (attached) or the draft document (provided by Betsy).

Thank you.

Susan Euling, Ph.D.
Human Health Risk Assessment Branch/HECD
Office of Science and Technology, Office of Water
U.S. Environmental Protection Agency
(o) 202-566-2717
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Appointment

From: Euling, Susan [Euling.Susan@epa.gov]
Sent: 6/8/2021 4:48:41 PM
To: Euling, Susan [Euling.Susan@epa.gov]; Thayer, Kris [thayer.kris@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]
CC: Kraft, Andrew [Kraft.Andrew@epa.gov]; Shams, Dahnish [Shams.Dahnish@epa.gov]; Soto, Vicki [Soto.Vicki@epa.gov]

Subject: Part 1: GenX SR/study qual eval discussion
Attachments: DRAFT GenX Chemicals Toxicity Assessment_2.4.21 CLEAN.docx
Location: Microsoft Teams Meeting

Start: 6/10/2021 3:30:00 PM
End: 6/10/2021 4:00:00 PM
Show Time As: Busy

Required Attendees: Thayer, Kris; Miller, GregoryG; Jacobs, Brittany
Optional Attendees: Kraft, Andrew; Shams, Dahnish; Soto, Vicki

Moving due to folks' availability.

Hi Kris,

We met with Samantha, Andrew, and Dahnish last week to discuss next steps to finalize GenX. Samantha offered your expert assistance on surgically revising the GenX study qual eval description (currently a mix of OPPT and IRIS)…with minimal effort and maximum justification!

The peer review draft is attached – we are revising based on peer review comments now so please do not share.

We really appreciate your assistance.

Thanks,
Sue

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Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 7/7/2021 3:37:01 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: Pls respond to email today: GenX schedule7/2021

<!--[if lte mso 15 || CheckWebRef]-->

Euling, Susan has shared a OneDrive for Business file with you. To view it, click the link below.

GenX chemicals tox assessment SCHEDULE 070621.docx

<!--[endif]-->

Betsy would like a revised schedule by Friday. Given that it is already Wednesday (yikes), could you look at this today or tomorrow (TH) and do a quick review? If you think that it would be more efficient for us to meet and discuss, I can set up a 30 min meeting. Please let me know your preference.

Thanks,
Sue

From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Tuesday, July 6, 2021 12:55 PM
To: Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: GenX schedule7/2021

Changed some but not all dates. See what you think. I added a milestone for comms development

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 7/7/2021 4:27:45 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: nice slide presentation on NC State superfund center

Thought you may like some of these GenX summary slides: https://clu-in.org/conf/tio/SRPPIR15/slides/1Slide_Presentation_for_Carolyn_Mattingly,_Ph.D.,_David_Reif,_Ph.D._and_Jamie_De Witt,_Ph.D.;_NC_State_University.pdf

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 7/7/2021 4:31:44 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]
CC: Miller, GregoryG [Miller.Gregory@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]
Subject: RE: GenX study of blood levels in adults and children in NC

OK great.

This article may be helpful info for OLEM since there is a NC superfund site there.

Sue

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Wednesday, July 7, 2021 12:27 PM
To: Euling, Susan <Euling.Susan@epa.gov>
Cc: Miller, GregoryG <Miller.Gregory@epa.gov>; Behl, Betsy <Behl.Betsy@epa.gov>
Subject: RE: GenX study of blood levels in adults and children in NC

Yes, this was also suggested by the peer reviewers so I was planning on incorporating. Thanks!

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Wednesday, July 7, 2021 12:21 PM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>
Cc: Miller, GregoryG <Miller.Gregory@epa.gov>; Behl, Betsy <Behl.Betsy@epa.gov>
Subject: GenX study of blood levels in adults and children in NC

Hi Brittany,

I noticed this study (attached) when digging around on the web about GenX exposure studies at Superfund sites (which this is not).

https://genxstudy.ncsu.edu/2020/07/22/genx-exposure-study-publishes-blood-results-paper/

I don't see it cited in the draft. Could we add it?

Sue

Appointment

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 7/7/2021 6:47:53 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]

Subject: GenX schedule revisit
Attachments: GenX chemicals tox assessment SCHEDULE 070621 BB.docx
Location: Microsoft Teams Meeting

Start: 7/8/2021 1:30:00 PM
End: 7/8/2021 2:00:00 PM
Show Time As: Tentative

Required Attendees: Jacobs, Brittany; Miller, GregoryG

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Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 7/8/2021 9:44:14 PM
To: Miller, GregoryG [Miller.Gregory@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: Pls review by 2pm Friday: GenX schedule
Attachments: GenX chemicals tox assessment SCHEDULE 070621 BB sye revise 070821.docx

Importance: High

Hi Greg and Brittany,

I know that Brittany may be out tomorrow so no need to work on a day off. Betsy needs this Monday so she can share with Deborah by Tuesday. Let me know your timing – early Monday am will work if Friday not possible.

Please review the GenX schedule in light of input from Betsy (below). If you think the schedule dates need to be changed, then please revise and send back to me. It shouldn't take too much time.

Thanks,
Sue

Input from Betsy (in **bold**):

Ex. 5 Deliberative Process (DP)

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 7/12/2021 12:37:01 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]
CC: Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: FW: 2 articles re GenX temporal progression of severity

Hi Brittany and Greg,

Ex. 5 Deliberative Process (DP)

Sue

Phthalate syndrome endpoints dose response methods –

From Gray et al. (2009): https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3145405/

Counted an animal with any of the phthalate syndrome endpoints as affected -

"Phthalate Syndrome Analysis

For this analysis, reproductive tract malformations and histological testicular and epididymal lesions were combined to discriminate affected from unaffected males. The "Phthalate Syndrome" analysis is based upon effects reported for DEHP and other reproductive toxicant phthalates, and includes both androgen- and insl3-dependent tissues as these are all affected by PE-induced reduction in fetal Leydig cell hormone production as described earlier (Gray and Foster, 2003). Testicular lesions also are included in syndrome as the testis is the primary target of in utero PE treatment. Males in the lower DEHP dose groups (11–100 mg/kg/day) displayed the following lesions and were considered as "affected"; retained nipples, fluid-filled flaccid testes (Fig. 3), hypoplastic (incompletely developed, similar to aplasia, but less severe) or malformed epididymides (Fig. 3), epididymal granuloma with small testis, testicular seminiferous tubular degeneration (both moderate and mild severity were noted; Fig. 3), malformed seminal vesicles or coagulating glands, and true hermaphroditism, in one male with uterine tissue and an ovotestis (Fig. 4). Permanent nipples are not seen in control males. Only two males, one in the 100 mg/kg/day dose group and the other in the 300 mg/kg/day dose group had abnormal gubernacular ligaments, a tissue that differentiates under the influence of the peptide hormone insulin-like 3 (insl3) and androgens."

Blessinger et al. (2019): Used different BMR % for different severity of endpts within the phthalate syndrome - https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7323710/pdf/nihms-1589961.pdf

Appointment

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 7/12/2021 3:54:07 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Lan, Alexis [lan.alexis@epa.gov]

Subject: FW: GenX
Location: Microsoft Teams Meeting

Start: 7/12/2021 8:00:00 PM
End: 7/12/2021 8:30:00 PM
Show Time As: Tentative

-----Original Appointment-----
From: Schutz, Michelle <Schutz.Michelle@epa.gov>
Sent: Monday, July 12, 2021 11:37 AM
To: Schutz, Michelle; Flaherty, Colleen; Behl, Betsy; Euling, Susan
Subject: GenX
When: Monday, July 12, 2021 4:00 PM-4:30 PM (UTC-05:00) Eastern Time (US & Canada).
Where: Microsoft Teams Meeting

Follow-up on comments regarding GenX.

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Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 7/12/2021 4:55:38 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: RE: GenX

No worries either way. Just thought you should be included. I'll keep you posted if you are not able to listen in.

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Monday, July 12, 2021 12:26 PM
To: Euling, Susan <Euling.Susan@epa.gov>
Subject: RE: GenX

Hi Sue,

I will try to listen in for this but Ex. 6 Personal Privacy (PP)

Britt

-----Original Appointment-----
From: Schutz, Michelle <Schutz.Michelle@epa.gov>
Sent: Monday, July 12, 2021 11:54 AM
To: Schutz, Michelle; Jacobs, Brittany; Lan, Alexis; Flaherty, Colleen; Behl, Betsy; Euling, Susan
Subject: GenX
When: Monday, July 12, 2021 4:00 PM-4:30 PM (UTC-05:00) Eastern Time (US & Canada).
Where: Microsoft Teams Meeting

-----Original Appointment-----
From: Schutz, Michelle <Schutz.Michelle@epa.gov>
Sent: Monday, July 12, 2021 11:37 AM
To: Schutz, Michelle; Flaherty, Colleen; Behl, Betsy; Euling, Susan
Subject: GenX
When: Monday, July 12, 2021 4:00 PM-4:30 PM (UTC-05:00) Eastern Time (US & Canada).
Where: Microsoft Teams Meeting

Follow-up on comments regarding GenX.

Microsoft Teams meeting

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From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 7/13/2021 2:38:23 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: RE: Need your feedback by 10:30am today: GenX update on peer review RtC for today's biweekly

Thanks!

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Tuesday, July 13, 2021 9:00 AM
To: Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: Need your feedback by 10:30am today: GenX update on peer review RtC for today's biweekly

Hi Sue,

It's looking like next week for incorporation into the doc.

Britt

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Tuesday, July 13, 2021 8:58 AM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: Need your feedback by 10:30am today: GenX update on peer review RtC for today's biweekly

Brittany,

Thanks for the reminder about the revision to the IRIS SR. I will likely get the question of when that will be complete…this or next week?

Excellent, thank you.

Sue

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Tuesday, July 13, 2021 8:48 AM
To: Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: Need your feedback by 10:30am today: GenX update on peer review RtC for today's biweekly

Ex. 5 Deliberative Process (DP)

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Tuesday, July 13, 2021 8:41 AM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: Need your feedback by 10:30am today: GenX update on peer review RtC for today's biweekly
Importance: High

Hi Guys,

I am planning to focus on the following –

1) Ex. 5 Deliberative Process (DP)

2)

Ex. 5 Deliberative Process (DP)

Was there another key comment?

Thanks so much,

Sue

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 7/13/2021 3:43:51 PM
To: Miller, GregoryG [Miller.Gregory@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: blurb for OST biweekly for Deborah
Attachments: 071321 OST Biweekly GenX blurb.docx

Hi Brittany and Greg,

Deborah is happy with the product and agrees with these decisions (attached)!

Great work.

Sue

Appointment

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 7/13/2021 5:11:22 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]

Subject: GenX 1 pager
Location: Microsoft Teams Meeting

Start: 7/13/2021 6:30:00 PM
End: 7/13/2021 7:00:00 PM
Show Time As: Tentative

Required Attendees: Jacobs, Brittany; Miller, GregoryG

If needed – let's see what we can do via email.

Microsoft Teams meeting

Join on your computer or mobile app
Click here to join the meeting

Or call in (audio only)

Ex. 6 Personal Privacy (PP) tates, Washington DC

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Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 7/13/2021 6:18:56 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: Please review
Attachments: 071321 v3 GenX one paper OST.docx

Importance: High

Let's walk through to make final changes at 2:30.

Colleen asked for no more than 1 page, bullet format, and easy to read language (nothing too technical).

Sue

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 7/13/2021 9:31:36 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: FW: genx one pager

From: Nagle, Deborah <Nagle.Deborah@epa.gov>
Sent: Tuesday, July 13, 2021 5:16 PM
To: Behl, Betsy <Behl.Betsy@epa.gov>; Weyer, Erica <weyer.erica@epa.gov>
Cc: Euling, Susan <Euling.Susan@epa.gov>
Subject: RE: genx one pager

This one-pager is good to go. Thanks. I have no edits

From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Tuesday, July 13, 2021 4:41 PM
To: Weyer, Erica <weyer.erica@epa.gov>
Cc: Euling, Susan <Euling.Susan@epa.gov>; Nagle, Deborah <Nagle.Deborah@epa.gov>
Subject: genx one pager

Deborah, see what you think about this one-pager for GenX

Elizabeth (Betsy) Behl, Director Health and Ecological Criteria Division,
Office of Science and Technology, Office of Water, EPA
Office: 202-566-0788
Cell: Ex. 6 Personal Privacy (PP)

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 7/14/2021 4:25:56 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]
CC: Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: 4pm 7/15 SRMD mtg: TCE Agency Workgroup - draft TCE preamble language
Attachments: 071321 OST Biweekly GenX blurb.docx

Hi Brittany and Greg,

See request below. Also you can see the suggested revisions on the TCE RM preamble (from Lili to OPPT).

Brittany, can you attend the meeting tomorrow? Let me know whether you would like to present the update. I'm fine either way.

I think it would be helpful to present the updated schedule (that you have) and the Biweekly GenX blurb (attached) that I yesterday. I'm also checking with Betsy on what info she wants to share and get back to you.

Sue

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To: Behl, Betsy <Behl.Betsy@epa.gov>; Euling, Susan <Euling.Susan@epa.gov>; Flaherty, Colleen <Flaherty.Colleen@epa.gov>; Wang, Lili <Wang.Lili@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Lombardi, Thomas <lombardi.thomas@epa.gov>
Subject: RE: TCE Agency Workgroup - draft TCE preamble language

Perfect. I will prepare the agenda.

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Cc: Lombardi, Thomas <lombardi.thomas@epa.gov>
Subject: RE: TCE Agency Workgroup - draft TCE preamble language

We could do a GenX update and share our plan for stakeholder input

Elizabeth (Betsy) Behl, Director Health and Ecological Criteria Division,
Office of Science and Technology, Office of Water, EPA
Office: 202-566-0788
Cell: Ex. 6 Personal Privacy (PP)

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Cc: Behl, Betsy <Behl.Betsy@epa.gov>; Lombardi, Thomas <lombardi.thomas@epa.gov>
Subject: RE: TCE Agency Workgroup - draft TCE preamble language

Absolutely. Let's put this on the agenda for tomorrow's SRMD/HECD meeting.

Any other topics for tomorrow's meeting?

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Wednesday, July 14, 2021 11:17 AM
To: Flaherty, Colleen <Flaherty.Colleen@epa.gov>; Wang, Lili <Wang.Lili@epa.gov>; Rodgers-Jenkins, Crystal <Rodgers-Jenkins.Crystal@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Behl, Betsy <Behl.Betsy@epa.gov>; Lombardi, Thomas <lombardi.thomas@epa.gov>
Subject: RE: TCE Agency Workgroup - draft TCE preamble language

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Cc: Behl, Betsy <Behl.Betsy@epa.gov>; Lombardi, Thomas <lombardi.thomas@epa.gov>
Subject: RE: TCE Agency Workgroup - draft TCE preamble language

Excellent edits, Sue. Lili, can you take it from here? Please let us know if there is a follow up meeting with OPPT on this topic.

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To: Flaherty, Colleen <Flaherty.Colleen@epa.gov>; Wang, Lili <Wang.Lili@epa.gov>; Rodgers-Jenkins, Crystal <Rodgers-Jenkins.Crystal@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Behl, Betsy <Behl.Betsy@epa.gov>; Lombardi, Thomas <lombardi.thomas@epa.gov>
Subject: RE: TCE Agency Workgroup - draft TCE preamble language

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To: Wang, Lili <Wang.Lili@epa.gov>; Euling, Susan <Euling.Susan@epa.gov>; Rodgers-Jenkins, Crystal <Rodgers-Jenkins.Crystal@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Behl, Betsy <Behl.Betsy@epa.gov>; Lombardi, Thomas <lombardi.thomas@epa.gov>
Subject: RE: TCE Agency Workgroup - draft TCE preamble language

Hi Lili, and all,

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

What do you think?

Thanks,
Colleen

From: Wang, Lili <Wang.Lili@epa.gov>
Sent: Friday, July 9, 2021 12:06 PM
To: Euling, Susan <Euling.Susan@epa.gov>; Rodgers-Jenkins, Crystal <Rodgers-Jenkins.Crystal@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Behl, Betsy <Behl.Betsy@epa.gov>; Lombardi, Thomas <lombardi.thomas@epa.gov>; Flaherty, Colleen <Flaherty.Colleen@epa.gov>
Subject: FW: TCE Agency Workgroup - draft TCE preamble language

Ex. 5 Deliberative Process (DP)

Eric/Crystal, let me know if you have any questions. Thanks,

Lili

Lili Wang, P.E., MBA
Acting Chief, Targeting and Analysis Branch
Standards and Risk Management Division
Office of Ground Water and Drinking Water
U.S. Environmental Protection Agency
Office: 202-564-9156
Cell: Ex. 6 Personal Privacy (PP)

From: McNamara, Katelan (Katie) <McNamara.Katelan@epa.gov>
Sent: Thursday, July 01, 2021 2:01 PM
To: Wolf, Joel <Wolf.Joel@epa.gov>; Wheeler, Cindy <Wheeler.Cindy@epa.gov>; Blake-Hedges, Lynne <Blake-Hedges.Lynne@epa.gov>; Callahan, Leigh <Callahan.Leigh@epa.gov>; Johnson, Ann <Johnson.Ann@epa.gov>; Euling, Susan <Euling.Susan@epa.gov>; Rebersak, Shannon <rebersak.shannon@epa.gov>; Raffaele, Kathleen <raffaele.kathleen@epa.gov>; Kramek, Niva <kramek.niva@epa.gov>; Austin, Wes <Austin.Wes@epa.gov>; Smith, David <Smith.David@epa.gov>; Cuje, Jace <Cuje.Jace@epa.gov>; Jacobs, Keith <jacobs.keith@epa.gov>; Kragie, Sheila Xiah <kragie.sheila@epa.gov>; Choudhary, Rehan <choudhary.rehan@epa.gov>; Egeghy, Peter <Egeghy.Peter@epa.gov>; Liu, Xiaoyu <Liu.Xiaoyu@epa.gov>; Phillips, Katherine <Phillips.Katherine@epa.gov>; Vulimiri, Suryanarayana <Vulimiri.Sury@epa.gov>; Barrett, William <Barrett.Williamm@epa.gov>; Fredrickson, Herbert <Fredrickson.Herbert@epa.gov>; Garvey, Mark <Garvey.Mark@epa.gov>; Ellenbogen, Victoria <Ellenbogen.Victoria@epa.gov>; Foster, Stiven <Foster.Stiven@epa.gov>; Tejada, Matthew <Tejada.Matthew@epa.gov>; Lombardi, Thomas <lombardi.thomas@epa.gov>; Wang, Lili <Wang.Lili@epa.gov>
Cc: Czarina C Cooper <Cooper.Czarina@epa.gov>; Dzubow, Rebecca <Dzubow.Rebecca@epa.gov>
Subject: RE: TCE Agency Workgroup - July 1st Meeting Agenda

Hi all,

Please find attached, as well as available on sharepoint:

1. July 1st, 2021 meeting notes
2. Early Guidance memo
3. Draft TCE Preamble language

Ex. 5 Deliberative Process (DP)

Ex. 6 Personal Privacy (PP)

Katie McNamara
Environmental Protection Specialist, RMB1
Existing Chemicals Risk Management Division
Office of Chemical Safety and Pollution Prevention

U.S. Environmental Protection Agency
Tel (202) 564-4361
McNamara.Katelan@epa.gov

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From: McNamara, Katelan (Katie)
Sent: Thursday, July 1, 2021 8:41 AM
To: Wolf, Joel <Wolf.Joel@epa.gov>; Wheeler, Cindy <Wheeler.Cindy@epa.gov>; Blake-Hedges, Lynne <Blake-Hedges.Lynne@epa.gov>; Callahan, Leigh <Callahan.Leigh@epa.gov>; Johnson, Ann <Johnson.Ann@epa.gov>; Euling, Susan <Euling.Susan@epa.gov>; Rebersak, Shannon <rebersak.shannon@epa.gov>; Raffaele, Kathleen <raffaele.kathleen@epa.gov>; Kramek, Niva <kramek.niva@epa.gov>; Austin, Wes <Austin.Wes@epa.gov>; Smith, David <Smith.David@epa.gov>; Cuje, Jace <Cuje.Jace@epa.gov>; Jacobs, Keith <jacobs.keith@epa.gov>; Kragie, Sheila Xiah <kragie.sheila@epa.gov>; Choudhary, Rehan <choudhary.rehan@epa.gov>; Egeghy, Peter <Egeghy.Peter@epa.gov>; Liu, Xiaoyu <Liu.Xiaoyu@epa.gov>; Phillips, Katherine <Phillips.Katherine@epa.gov>; Vulimiri, Suryanarayana <Vulimiri.Sury@epa.gov>; Barrett, William <Barrett.Williamm@epa.gov>; Fredrickson, Herbert <Fredrickson.Herbert@epa.gov>; Garvey, Mark <Garvey.Mark@epa.gov>; Ellenbogen, Victoria <Ellenbogen.Victoria@epa.gov>; Foster, Stiven <Foster.Stiven@epa.gov>; Tejada, Matthew <Tejada.Matthew@epa.gov>; Lombardi, Thomas <lombardi.thomas@epa.gov>; Wang, Lili <Wang.Lili@epa.gov>
Cc: Czarina C Cooper <Cooper.Czarina@epa.gov>
Subject: TCE Agency Workgroup - July 1st Meeting Agenda

Hi all,

Please see the agenda for this morning attached, thanks!

Ex. 6 Personal Privacy (PP)

Katie McNamara
Environmental Protection Specialist, RMB1
Existing Chemicals Risk Management Division
Office of Chemical Safety and Pollution Prevention
U.S. Environmental Protection Agency
Tel (202) 564-4361
McNamara.Katelan@epa.gov

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Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 7/14/2021 4:37:33 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]
CC: Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: RE: 4pm 7/15 SRMD mtg: TCE Agency Workgroup - draft TCE preamble language

I just heard back from Betsy and she is good with the scope of the update calendar and the response to PR comments. Feel free to revise materials to your liking. She did not add any other items to the presentation.

Thanks!
Sue

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Wednesday, July 14, 2021 12:36 PM
To: Euling, Susan <Euling.Susan@epa.gov>
Cc: Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: 4pm 7/15 SRMD mtg: TCE Agency Workgroup - draft TCE preamble language

Hi Sue,

Yes I can attend and would be happy to chat about GenX. Let me know if Betsy has additional thoughts.

Thanks,
Britt

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Wednesday, July 14, 2021 12:26 PM
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Hi Brittany and Greg,

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Subject: RE: TCE Agency Workgroup - draft TCE preamble language

Perfect. I will prepare the agenda.

From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Wednesday, July 14, 2021 11:30 AM
To: Rodgers-Jenkins, Crystal <Rodgers-Jenkins.Crystal@epa.gov>; Euling, Susan <Euling.Susan@epa.gov>; Flaherty, Colleen <Flaherty.Colleen@epa.gov>; Wang, Lili <Wang.Lili@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>
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We could do a GenX update and share our plan for stakeholder input

Elizabeth (Betsy) Behl, Director Health and Ecological Criteria Division,
Office of Science and Technology, Office of Water, EPA
Office: 202-566-0788
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Cc: Behl, Betsy <Behl.Betsy@epa.gov>; Lombardi, Thomas <lombardi.thomas@epa.gov>
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Cc: Behl, Betsy <Behl.Betsy@epa.gov>; Lombardi, Thomas <lombardi.thomas@epa.gov>
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Excellent edits, Sue. Lili, can you take it from here? Please let us know if there is a follow up meeting with OPPT on this topic.

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Jenkins.Crystal@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>
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Hi Lili, and all,

Ex. 5 Deliberative Process (DP)

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What do you think?

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Eric/Crystal, let me know if you have any questions. Thanks,

Lili

Lili Wang, P.E., MBA
Acting Chief, Targeting and Analysis Branch
Standards and Risk Management Division
Office of Ground Water and Drinking Water
U.S. Environmental Protection Agency
Office: 202-564-9156
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Cc: Czarina C Cooper <Cooper.Czarina@epa.gov>; Dzubow, Rebecca <Dzubow.Rebecca@epa.gov>
Subject: RE: TCE Agency Workgroup - July 1st Meeting Agenda

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2. Early Guidance memo
3. Draft TCE Preamble language

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Ex. 6 Personal Privacy (PP)

Katie McNamara
Environmental Protection Specialist, RMB1
Existing Chemicals Risk Management Division
Office of Chemical Safety and Pollution Prevention
U.S. Environmental Protection Agency
Tel (202) 564-4361
McNamara.Katelan@epa.gov

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From: McNamara, Katelan (Katie)
Sent: Thursday, July 1, 2021 8:41 AM
To: Wolf, Joel <Wolf.Joel@epa.gov>; Wheeler, Cindy <Wheeler.Cindy@epa.gov>; Blake-Hedges, Lynne <Blake-Hedges.Lynne@epa.gov>; Callahan, Leigh <Callahan.Leigh@epa.gov>; Johnson, Ann <Johnson.Ann@epa.gov>; Euling, Susan <Euling.Susan@epa.gov>; Rebersak, Shannon <rebersak.shannon@epa.gov>; Raffaele, Kathleen <raffaele.kathleen@epa.gov>; Kramek, Niva <kramek.niva@epa.gov>; Austin, Wes <Austin.Wes@epa.gov>; Smith, David <Smith.David@epa.gov>; Cuje, Jace <Cuje.Jace@epa.gov>; Jacobs, Keith <jacobs.keith@epa.gov>; Kragie, Sheila Xiah <kragie.sheila@epa.gov>; Choudhary, Rehan <choudhary.rehan@epa.gov>; Egeghy, Peter <Egeghy.Peter@epa.gov>; Liu, Xiaoyu <Liu.Xiaoyu@epa.gov>; Phillips, Katherine <Phillips.Katherine@epa.gov>; Vulimiri, Suryanarayana <Vulimiri.Sury@epa.gov>; Barrett, William <Barrett.Williamm@epa.gov>; Fredrickson, Herbert <Fredrickson.Herbert@epa.gov>; Garvey, Mark <Garvey.Mark@epa.gov>; Ellenbogen, Victoria <Ellenbogen.Victoria@epa.gov>; Foster, Stiven <Foster.Stiven@epa.gov>; Tejada, Matthew <Tejada.Matthew@epa.gov>; Lombardi, Thomas <lombardi.thomas@epa.gov>; Wang, Lili <Wang.Lili@epa.gov>
Cc: Czarina C Cooper <Cooper.Czarina@epa.gov>
Subject: TCE Agency Workgroup - July 1st Meeting Agenda

Hi all,

Please see the agenda for this morning attached, thanks!

Ex. 6 Personal Privacy (PP)

Katie McNamara
Environmental Protection Specialist, RMB1
Existing Chemicals Risk Management Division
Office of Chemical Safety and Pollution Prevention
U.S. Environmental Protection Agency
Tel (202) 564-4361
McNamara.Katelan@epa.gov

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Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 7/15/2021 12:59:38 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: RE: HRAB one-on-one: Brittany - start at 9:05

I need 5 min so let's start at 9:05

-----Original Appointment-----
From: Euling, Susan
Sent: Monday, April 26, 2021 6:04 PM
To: Euling, Susan; Jacobs, Brittany; Miller, GregoryG
Subject: HRAB one-on-one: Brittany
When: Thursday, July 15, 2021 9:00 AM-9:30 AM (UTC-05:00) Eastern Time (US & Canada).
Where: Microsoft Teams Meeting

Greg, jump on for the 1st agenda item!

Agenda:

1) GenX discussion with Sue Fenton – Greg and Brittany
2) PFOA/S
3) GenX
4) DBP TO (ICF)
5) HA technical directive (TT)
6) Other?

Microsoft Teams meeting

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Ex. 6 Personal Privacy (PP) tates, Washington DC

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Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 7/19/2021 3:23:02 AM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: FW: Updated grammar rule from OW
Attachments: TD for Technical Edit on GenX Final Assessment and 2nd Response to Peer Review_7.2021 sye edits.docx

Happy Monday Brittany!

I added these instructions (below) into the GenX tech edit instructions for TT.

See if you have any other edits. When you are done, please send on to Shamima and tell her the timing so she can give TT a heads up.

Thanks,
Sue

From: Weyer, Erica <weyer.erica@epa.gov>
Sent: Wednesday, May 19, 2021 12:14 PM
To: OST-EVERYONE <OSTEVERYONE@epa.gov>
Subject: Updated grammar rule from OW

Hi all,

Going forward, in documents including rules, guidance, formal correspondence, among others, please no longer capitalize the "a" in "agency" when referring to the EPA. Please short cite the U.S. Environmental Protection Agency as (EPA), not as (EPA or Agency).

As a reminder, the first instance in a document should be "U.S. Environmental Protection Agency (EPA)." (Don't forget the "U.S."!) Thereafter, you can refer to "EPA" or the "agency." As before, you should not use "the" before "EPA".

Examples:

Correct: The U.S. Environmental Protection Agency (EPA) is finalizing its guidance on XXX.
Not correct: The Environmental Protection Agency (EPA or Agency) is finalizing its guidance on XXX.

Correct: The agency expects to publish the final version in Fall 2021.
Not correct: The Agency expects to publish the final version in Fall 2021.

Correct: EPA will release the final version in Fall 2021.
Not correct: The EPA will release the final version in Fall 2021.

Let me know if you have questions.
Erica Weyer
Special Assistant and Regulatory Manager
Office of Science and Technology – Office of Water
U.S. Environmental Protection Agency
(202)566-2793

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 7/19/2021 1:17:46 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]
CC: Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: RE: Need by COB today: TT technical direction for GenX, PFOA/S, and HA table update work

Hi Brittany,

Ex. 5 Deliberative Process (DP)

Thanks,
Sue

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Monday, July 19, 2021 8:04 AM
To: Euling, Susan <Euling.Susan@epa.gov>
Cc: Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: Need by COB today: TT technical direction for GenX, PFOA/S, and HA table update work

Hi Sue,

Ex. 5 Deliberative Process (DP)

Thanks,
Britt

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Sunday, July 18, 2021 11:36 PM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>
Cc: Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: Need by COB today: TT technical direction for GenX, PFOA/S, and HA table update work

Hi Brittany,

I sent you comments on the GenX technical direction in a separate email.

Ex. 5 Deliberative Process (DP)

Please cc me when you send on to Shamima.

Thanks,
Sue

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Tuesday, July 13, 2021 3:36 PM
To: Euling, Susan <Euling.Susan@epa.gov>
Cc: Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: Need by COB today: TT technical direction for GenX, PFOA/S, and HA table update work

Hi Sue,

Ex. 5 Deliberative Process (DP)

Let me know if you want to discuss or have any questions.

Britt

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Monday, July 12, 2021 11:13 AM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: Need by COB today: TT technical direction for GenX, PFOA/S, and HA table update work
Importance: High

Hi Brittany and Greg,

[redacted]

Ex. 5 Deliberative Process (DP)

The key thing is to write with an awareness of the scope of work. Please also include an estimated $ amount.

A similar request has gone to Kelly for the QAQC of the PFAS State table.

If today is impossible, then by noon tomorrow is fine.

Thanks,
Sue

From: Akhter, Shamima <Akhter.Shamima@epa.gov>
Sent: Monday, July 12, 2021 10:59 AM
To: Euling, Susan <Euling.Susan@epa.gov>; Harrison, Shirley <Harrison.Shirley@epa.gov>
Subject: RE: Funding

Thanks, Sue. It would be good to have a paragraph or in a bullet forms.

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Monday, July 12, 2021 10:55 AM
To: Akhter, Shamima <Akhter.Shamima@epa.gov>; Harrison, Shirley <Harrison.Shirley@epa.gov>
Subject: RE: Funding

Hi Shamima,

I will send you the list of work later today. Do you need one sentence or one paragraph on each item?

Sue

From: Akhter, Shamima <Akhter.Shamima@epa.gov>
Sent: Monday, July 12, 2021 9:12 AM
To: Harrison, Shirley <Harrison.Shirley@epa.gov>
Cc: Euling, Susan <Euling.Susan@epa.gov>
Subject: RE: Funding

Hi Sue,

For the modification to the task order, I need a list of the tasks that would cover the funds. Following items are required for this modification.

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

Thanks,
Shamima

From: Harrison, Shirley <Harrison.Shirley@epa.gov>
Sent: Monday, July 12, 2021 9:00 AM
To: Akhter, Shamima <Akhter.Shamima@epa.gov>
Cc: Euling, Susan <Euling.Susan@epa.gov>
Subject: RE: Funding

Hi Shamima

Please let Susan know what you need (task language/deliverables, etc.) in order to prepare the Modification to the task order. Once you have completed your paperwork, please submit to me and I will attach to the Requisition (PR) for processing.

thanks

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Monday, July 12, 2021 8:42 AM
To: Harrison, Shirley <Harrison.Shirley@epa.gov>
Cc: Akhter, Shamima <Akhter.Shamima@epa.gov>
Subject: RE: Funding

Hi Shirley,

Ex. 5 Deliberative Process (DP)

Thanks,
Sue

From: Harrison, Shirley <Harrison.Shirley@epa.gov>
Sent: Monday, July 12, 2021 8:33 AM
To: Euling, Susan <Euling.Susan@epa.gov>
Subject: Funding

Hi Susan

Have you decided how much you are planning to allocate to Shamima's SHPD task order and the DBPs task order with ICF (ORD)?

thanks

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 7/19/2021 6:45:07 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]
CC: Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: RE: quick question -- NTP report - GenX

If we are talking about the Preliminary mtg on GenX Wed at 2pm, yes, Betsy will do the prep and talking. I sent her the latest information that I have and she now has the NTP report HERO Link and thanks you for it!

Sue

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Monday, July 19, 2021 1:25 PM
To: Euling, Susan <Euling.Susan@epa.gov>
Cc: Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: quick question -- NTP report - GenX

Hi Sue,

Confirming that we do not need to prep any presentation materials for the discussion on Wednesday? Plan is for Betsy to do the majority of the talking?

Thanks, will help me with prioritizing this week.

Britt

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Monday, July 19, 2021 11:23 AM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>
Cc: Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: quick question -- NTP report - GenX

Thanks Brittany. Excellent.

Sue

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Monday, July 19, 2021 11:07 AM
To: Euling, Susan <Euling.Susan@epa.gov>
Cc: Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: quick question -- NTP report - GenX

Hi Sue,

We made it publicly available by putting it on HERO:
https://hero.epa.gov/hero/index.cfm/project/page/page/1/rows/10/sort/year%20desc/format/list/project_id/2627/criteria_all/NTP/usage_searchType/any

Betsy requested we do this so the states had access to it when we were held up in OW IO review.

Britt

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Monday, July 19, 2021 10:44 AM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>
Cc: Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: quick question -- NTP report - GenX

Hi Brittany,

Is the NTP report to EPA part of the GenX draft? Or even better, is the NTP report a separate, publicly available report?

Context: Betsy is talking to States this week and identifying what she can include/what is public info (can't include 2nd round peer review comments).

Sue

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 7/21/2021 2:28:05 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: RE: Planning ahead: GenX

Great, thank you.

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Wednesday, July 21, 2021 10:13 AM
To: Euling, Susan <Euling.Susan@epa.gov>
Subject: RE: Planning ahead: GenX

That sounds good to me, I will block Monday and Tuesday for responding to comments

---

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Wednesday, July 21, 2021 10:04 AM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: RE: Planning ahead: GenX

Hi Brittany,

Thanks for the heads up.

If I get it Thurs or Fri, I can get comments back to you on Monday. Does that work or do I need to be faster? I would put this in Greg's court (since he will be acting Thurs afternoon and Friday) but that won't work since he is a co-author of the assessment.

Let me know,

Sue

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Wednesday, July 21, 2021 7:06 AM
To: Euling, Susan <Euling.Susan@epa.gov>
Subject: RE: Planning ahead: GenX

Hi Sue,

I will try to have it to you early Thursday of next week. Not sure I can get it done before then.

Britt

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Tuesday, July 20, 2021 9:32 PM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: Planning ahead: GenX

Hi Brittany,

I'm wondering roughly when GenX will be coming to me for review since I am on a partial vacation. I want to make sure that my turnaround time is fast.

Thanks,
Sue

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 7/22/2021 1:45:35 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: GenX EJ

EJ definition: EPA defines environmental justice as "the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation and enforcement of environmental laws, regulations and policies." Environmental justice is a major part of the agency's core mission of protecting human life and the environment.

https://www.epa.gov/newsreleases/epa-administrator-announces-agency-actions-advance-environmental-justice

2. Take immediate and affirmative steps to incorporate environmental justice considerations into their work, including assessing impacts to pollution-burdened, underserved, and Tribal communities in regulatory development processes and to consider regulatory options to maximize benefits to these communities.

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 7/26/2021 1:36:39 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: RE: Embargoed Copy of Draft Public Health Goals

Sensitivity: Company Confidential

Works for me. Catching up this Monday am.

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Monday, July 26, 2021 9:28 AM
To: Euling, Susan <Euling.Susan@epa.gov>
Subject: RE: Embargoed Copy of Draft Public Health Goals
Sensitivity: Confidential

Hi Sue,

The plan is to mention it this Wednesday at the Science Work Group meeting and we can follow up with a link.

Britt

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Monday, July 26, 2021 9:22 AM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: RE: Embargoed Copy of Draft Public Health Goals
Sensitivity: Confidential

Hi Brittany,

Great idea.

Have you shared the CalEPA draft (https://oehha.ca.gov/water/crnr/announcement-availability-draft-technical-support-document-and-public-workshop-proposed) with the PFOA/S science working group? Let me know if you would like my help with any of the draft review.

Thanks,
Sue

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Thursday, July 22, 2021 1:06 PM
To: Euling, Susan <Euling.Susan@epa.gov>; Behl, Betsy <Behl.Betsy@epa.gov>
Subject: RE: Embargoed Copy of Draft Public Health Goals
Sensitivity: Confidential

Ex. 5 Deliberative Process (DP)

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Thursday, July 22, 2021 11:56 AM
To: Behl, Betsy <Behl.Betsy@epa.gov>

Cc: Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: RE: Embargoed Copy of Draft Public Health Goals
Sensitivity: Confidential

Ex. 5 Deliberative Process (DP)

across subgroups.

Sue

From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Thursday, July 22, 2021 11:43 AM
To: Euling, Susan <Euling.Susan@epa.gov>
Cc: Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: Re: Embargoed Copy of Draft Public Health Goals
Sensitivity: Confidential

Ex. 5 Deliberative Process (DP)

Sent from my iPhone

On Jul 22, 2021, at 10:08 AM, Euling, Susan <Euling.Susan@epa.gov> wrote:

Ex. 5 Deliberative Process (DP)

From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Thursday, July 22, 2021 9:55 AM
To: Euling, Susan <Euling.Susan@epa.gov>
Cc: Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: RE: Embargoed Copy of Draft Public Health Goals
Sensitivity: Confidential

I can ask Elaine Kahn, but I imagine they would be. Will send a note

---

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Thursday, July 22, 2021 9:23 AM
To: Behl, Betsy <Behl.Betsy@epa.gov>
Cc: Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: RE: Embargoed Copy of Draft Public Health Goals
Sensitivity: Confidential

Hi Betsy,

Would OEHHA be open to OST comments? Since we will need to review it anyway, it may be helpful to them.

I'll check for when it is released (supposed to be sometime today) and then Brittany can share with the PFOA/S science working group.

Sue

From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Tuesday, July 20, 2021 3:42 PM
To: Euling, Susan <Euling.Susan@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: FW: Embargoed Copy of Draft Public Health Goals
Sensitivity: Confidential

Sending this to you because of your work with the MCLG. Please do not distribute.

From: Khan, Elaine@OEHHA <Elaine.Khan@oehha.ca.gov>
Sent: Tuesday, July 20, 2021 10:49 AM
To: Behl, Betsy <Behl.Betsy@epa.gov>
Subject: Embargoed Copy of Draft Public Health Goals
Sensitivity: Confidential

Hi, Betsy.

It was nice speaking with you this morning. As mentioned, attached is the embargoed copy of the technical support document for the proposed PHGs we will be releasing on Thursday. Please do not distribute. Thank you.

All the best,
Elaine

Elaine M. Khan, Ph.D., Chief
Water Toxicology Section
Office of Environmental Health Hazard Assessment
California Environmental Protection Agency
1001 I Street, Sacramento, CA 95814
Mail: MS-12B, P.O. Box 4010, Sacramento, CA 95812
Tel: 916.324.1277 | Fax: 916.327.7320 | elaine.khan@oehha.ca.gov

<image001.png>

OEHHA is hiring! See listings here.

Please note: OEHHA is subject to the California Public Records Act.
E-mail communications are not confidential and may be produced to members of the public upon request.

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 7/27/2021 1:17:07 AM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: RE: GenX scheduling

Hi Brittany,

Thanks for letting me know.

Sue

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Monday, July 26, 2021 1:34 PM
To: Euling, Susan <Euling.Susan@epa.gov>
Subject: RE: GenX scheduling

Hi Sue,

Ex. 6 Personal Privacy (PP)

Britt

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Monday, July 26, 2021 12:25 PM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: GenX scheduling

Hi Brittany,

Betsy is asking for your and Greg's August vacation dates for scheduling. Here are Greg's dates:
G Ex. 6 Personal Privacy (PP)

I know we discussed your vacation at your on-on-one and you weren't sure that you would be able to fit a vacation in. Anyway, if you could let me know whether there are any days when you will or may be on vacation then that would be great. Match up with a few days during Greg's?

Sue

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 7/30/2021 2:03:12 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]
CC: Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: RE: GenX Final Assessment and Response to Second Peer Review for your review

Thanks so much Brittany! This was a lot of work.

Sue

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Friday, July 30, 2021 9:43 AM
To: Behl, Betsy <Behl.Betsy@epa.gov>; Euling, Susan <Euling.Susan@epa.gov>
Cc: Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: GenX Final Assessment and Response to Second Peer Review for your review
Importance: High

Good Morning,

I'm extremely happy to send you the GenX final assessment and response to the second peer review for your review. I am attaching them as links since there are multiple reviewers. The assessment is in track changes so you can see what has changed since the second peer review. Note we will need a tech edit on these documents and I have call outs to Tetra Tech for the tech edit in comment bubbles.

Highlighted below are the sections where most of the editing was done in the assessment if you want to focus your review:

Ex. 5 Deliberative Process (DP)

Let me know if you have any questions. I look forward to your edits and feedback!

All the best,

Brittany

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 8/2/2021 12:55:30 PM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: RE: GenX plans for monitoring by NHANES

I will attend the NHANES meeting this morning as well and will pass on notes to you Brittany.

Sue

From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Monday, August 2, 2021 8:54 AM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>; Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: GenX plans for monitoring by NHANES

No problem.

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Monday, August 2, 2021 8:45 AM
To: Behl, Betsy <Behl.Betsy@epa.gov>; Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: GenX plans for monitoring by NHANES

Good Morning,

I have a conflict at this time with the PFOA/PFOS animal tox subgroup. We are reviewing draft syntheses for the

Ex. 5 Deliberative Process (DP)

Thanks!
Britt

-----Original Appointment-----
From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Monday, July 26, 2021 11:46 AM
To: Behl, Betsy; Euling, Susan; Miller, GregoryG; Jacobs, Brittany; aic7@CDC.gov
Subject: GenX plans for monitoring by NHANES
When: Monday, August 2, 2021 11:30 AM-12:00 PM (UTC-05:00) Eastern Time (US & Canada).
Where: Microsoft Teams Meeting

Microsoft Teams meeting

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Ex. 6 Personal Privacy (PP) tes, Washington DC

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Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 8/3/2021 4:25:24 AM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: FW: GenX Final Assessment and Response to Second Peer Review for your review

Importance: High

<!--[if lte mso 15 || CheckWebRef]-->

Euling, Susan has shared a OneDrive for Business file with you. To view it, click the link below.

2nd Response to Peer Review_GenX_6.2021.docx

<!--[endif]-->

I got an error message when I forwarded your SP draft to Betsy. Can she edit it?

From: Euling, Susan
Sent: Tuesday, August 3, 2021 12:24 AM
To: Behl, Betsy <Behl.Betsy@epa.gov>
Cc: Jacobs, Brittany <Jacobs.Brittany@epa.gov>
Subject: FW: GenX Final Assessment and Response to Second Peer Review for your review
Importance: High

Hi Betsy,

I have finished my comments on the response to comments document (SP version attached).

I'm almost done with the GenX draft revisions.

Sue

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Friday, July 30, 2021 9:43 AM
To: Behl, Betsy <Behl.Betsy@epa.gov>; Euling, Susan <Euling.Susan@epa.gov>
Cc: Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: GenX Final Assessment and Response to Second Peer Review for your review
Importance: High

Good Morning,

I'm extremely happy to send you the GenX final assessment and response to the second peer review for your review. I am attaching them as links since there are multiple reviewers. The assessment is in track changes so you can see what has changed since the second peer review. Note we will need a tech edit on these documents and I have call outs to Tetra Tech for the tech edit in comment bubbles.

Highlighted below are the sections where most of the editing was done in the assessment if you want to focus your review:

- **Ex. 5 Deliberative Process (DP)**
-

Ex. 5 Deliberative Process (DP)

Let me know if you have any questions. I look forward to your edits and feedback!

All the best,
Brittany

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 8/3/2021 2:13:19 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: RE: GenX - two additional points

OK thanks.

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Tuesday, August 3, 2021 10:13 AM
To: Euling, Susan <Euling.Susan@epa.gov>
Subject: RE: GenX - two additional points

Hi Sue,

All of your edits are there, thanks! Okay, I will make those clarification.

Britt

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Tuesday, August 3, 2021 9:31 AM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: GenX - two additional points

Hi Brittany,

I had a lot of trouble with the SP versions of the two documents. If there are no edits in the 2 documents then let me know! I heard that Liz is having a similar problem with saving of edits in SP docs.

Ex. 5 Deliberative Process (DP)

Sue

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 8/3/2021 5:35:28 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]
Subject: RE: Embargoed Copy of Draft Public Health Goals

Sensitivity: Company Confidential

All good points. I'll get back to you.

Sue

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Tuesday, August 3, 2021 12:54 PM
To: Euling, Susan <Euling.Susan@epa.gov>; Behl, Betsy <Behl.Betsy@epa.gov>
Subject: RE: Embargoed Copy of Draft Public Health Goals
Sensitivity: Confidential

Hi Sue,

Ex. 5 Deliberative Process (DP)

Thanks,
Britt

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Tuesday, August 3, 2021 12:45 PM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>; Behl, Betsy <Behl.Betsy@epa.gov>
Subject: RE: Embargoed Copy of Draft Public Health Goals
Sensitivity: Confidential

Brittany,

You have shared the CalEPA doc with the science working group, correct?

Do you have a plan for collecting comments or do you need help?

It sounds like we will be providing comments directly to Betsy's contact at CalEPA and not through the public comment channel so it's important to establish an earlier deadline than 60 days. Let me know if you need assistance.

Thanks,
Sue

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Thursday, July 22, 2021 1:06 PM
To: Euling, Susan <Euling.Susan@epa.gov>; Behl, Betsy <Behl.Betsy@epa.gov>
Subject: RE: Embargoed Copy of Draft Public Health Goals
Sensitivity: Confidential

Ex. 5 Deliberative Process (DP)

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Thursday, July 22, 2021 11:56 AM
To: Behl, Betsy <Behl.Betsy@epa.gov>
Cc: Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: RE: Embargoed Copy of Draft Public Health Goals
Sensitivity: Confidential

Ex. 5 Deliberative Process (DP)

Sue

From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Thursday, July 22, 2021 11:43 AM
To: Euling, Susan <Euling.Susan@epa.gov>
Cc: Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: Re: Embargoed Copy of Draft Public Health Goals
Sensitivity: Confidential

Ex. 5 Deliberative Process (DP)

Sent from my iPhone

On Jul 22, 2021, at 10:08 AM, Euling, Susan <Euling.Susan@epa.gov> wrote:

Ex. 5 Deliberative Process (DP)

From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Thursday, July 22, 2021 9:55 AM
To: Euling, Susan <Euling.Susan@epa.gov>
Cc: Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: RE: Embargoed Copy of Draft Public Health Goals
Sensitivity: Confidential

I can ask Elaine Kahn, but I imagine they would be. Will send a note

---

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Thursday, July 22, 2021 9:23 AM

To: Behl, Betsy <Behl.Betsy@epa.gov>
Cc: Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: RE: Embargoed Copy of Draft Public Health Goals
Sensitivity: Confidential

Hi Betsy,

Would OEHHA be open to OST comments? Since we will need to review it anyway, it may be helpful to them.

I'll check for when it is released (supposed to be sometime today) and then Brittany can share with the PFOA/S science working group.

Sue

From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Tuesday, July 20, 2021 3:42 PM
To: Euling, Susan <Euling.Susan@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: FW: Embargoed Copy of Draft Public Health Goals
Sensitivity: Confidential

Sending this to you because of your work with the MCLG. Please do not distribute.

From: Khan, Elaine@OEHHA <Elaine.Khan@oehha.ca.gov>
Sent: Tuesday, July 20, 2021 10:49 AM
To: Behl, Betsy <Behl.Betsy@epa.gov>
Subject: Embargoed Copy of Draft Public Health Goals
Sensitivity: Confidential

Hi, Betsy.

It was nice speaking with you this morning. As mentioned, attached is the embargoed copy of the technical support document for the proposed PHGs we will be releasing on Thursday. Please do not distribute. Thank you.

All the best,
Elaine

Elaine M. Khan, Ph.D., Chief
Water Toxicology Section
Office of Environmental Health Hazard Assessment
California Environmental Protection Agency
1001 I Street, Sacramento, CA 95814
Mail: MS-12B, P.O. Box 4010, Sacramento, CA 95812
Tel: 916.324.1277 | Fax: 916.327.7320 | elaine.khan@oehha.ca.gov

<image001.png>

OEHHA is hiring! See listings here.

Please note: OEHHA is subject to the California Public Records Act.
E-mail communications are not confidential and may be produced to members of the public upon request.

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 8/4/2021 3:30:18 AM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: RE: MMWR on GenX from Antonia Calafat

OK I hope that the 2020 larger study measured before the residents switched to bottled water!

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Tuesday, August 3, 2021 8:01 PM
To: Euling, Susan <Euling.Susan@epa.gov>
Subject: RE: MMWR on GenX from Antonia Calafat

Ex. 5 Deliberative Process (DP)

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Tuesday, August 3, 2021 4:44 PM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: MMWR on GenX from Antonia Calafat

Do you think this would add something to the GenX doc?

https://www.cdc.gov/mmwr/volumes/68/wr/mm6829a4.htm

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 8/4/2021 7:51:50 PM
To: Miller, GregoryG [Miller.Gregory@epa.gov]; Soares, Barbara [soares.barbara@epa.gov]; Etzel, Ruth [Etzel.Ruth@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Lindberg, Casey [Lindberg.Casey@epa.gov]
Subject: FYI: Former Research Chief Sees Test Methods Aiding PFAS Disposal Studies

Former Research Chief Sees Test Methods Aiding PFAS Disposal Studies

August 4, 2021

Former acting EPA research chief Jennifer Orme-Zavaleta says detection of per- and polyfluoroalkyl substances (PFAS) is "central" to research into the chemicals' toxicity and ways to safely destroy them, adding new urgency to the debate on whether the agency should use TSCA reporting mandates to collect PFAS-specific detection methods.

During an exclusive interview with *Inside TSCA* shortly before she retired as acting chief for the Office of Research and Development (ORD), Orme-Zavaleta said detecting and measuring "what's out there in the environment, in a lot of media, in surface water, groundwater, soil, sediment, fish tissue" has been "central" to ORD's work on PFAS.

That research, in turn, has supported analysis of the chemicals under the Toxic Substances Control Act (TSCA) and other programs.

In particular, she said, over the last three years researchers have focused on methods of detecting PFAS in air emissions, as a critical step in tracing contamination back to incineration that can release perfluorinated chemicals in smoke.

"If we're looking at incineration as a method of disposal, we have to look at air, at byproducts, if destruction is not complete, how far might they travel in the air, where might they deposit," Orme-Zavaleta said.

And she said that analysis will rely on the availability of analytical methods -- chemical-specific test processes that scientists can use to identify particular PFAS in air, water or other media.

Recent PFAS research has highlighted what regulators and environmental groups both say is a need for more targeted test methods for PFAS that either work in additional media or that detect individual chemicals in the class rather than total fluorine levels.

Environmentalists in particular have urged EPA to use its TSCA data-gathering authority to require companies to submit test methods for PFAS they manufacture or import, while Congress is weighing legislation that would mandate reporting of the standards in addition to imposing sweeping new limits on PFAS.

PFAS-specific test methods are vital, proponents say, because there are thousands of known perflourinated chemicals and identifying the source of any particular contamination will often require discerning the particular compound at issue, which can then be traced to particular products or facilities that use the substance.

Better test methods could help resolve the long-standing arguments from environmental groups and other supporters of strict PFAS rules that the widely used practice of burning contaminated material in incinerators or cement kilns does not fully destroy perfluorinated chemicals and likely releases them back into the environment.

But in its December 2020 interim guidance on disposing of PFAS, EPA only outlined currently available technologies such as incineration and the uncertainties and knowledge gaps that still need to be addressed on each, while declining to endorse or dismiss any.

More robust testing for individual PFAS could help connect incineration to potential environmental contamination, Orme-Zavaleta told *Inside TSCA*.

'Non-Targeted' Analysis

While targeted test methods are vital to some areas of PFAS analysis, Orme-Zavaleta said others also benefit from "non-targeted" methods that show total levels of fluorinated compounds rather than only a single chemical.
"The non-targeted analyses have also been critical, that's what's opened the door for finding what is out there, where are we finding it and does it persist," she said.

"Those are key aspects, better understanding exposure, pathways of exposure and the significance of pathways to better target how to protect people and organisms in the environment." She noted that testing with non-targeted methods allowed for the discovery of a newer replacement PFAS known as GenX.

"You have to do both," she concluded, adding the non-targeted analyses "helps us discover what else might be there and then we can ask, 'Should we be concerned?'"

Ultimately, she added, the "goal is for nontargeted [testing] to become targeted. Be more qualitative initially, help you quantify levels. If you find it widespread, that would make it potentially a candidate for regulating in the water office or elsewhere. It opens the door for more work to be done."

But she also acknowledged that understanding exposure and the risk it may present "takes time" while communities where PFAS is found "just want to get rid of it" -- a goal that has become "a driver of our work on destruction methods." And while that research "slowed with [the] pandemic," Orme-Zavaleta said, it "is starting to pick up again."
-- *Maria Hegstad* (mhegstad@iwpnews.com) & *David LaRoss* (dlaross@iwpnews.com)

Appointment

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 8/4/2021 9:43:49 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]

Subject: HRAB one-on-one: Brittany
Location: Microsoft Teams Meeting

Start: 8/6/2021 1:00:00 PM
End: 8/6/2021 1:30:00 PM
Show Time As: Tentative

Recurrence: Weekly
every Thursday from 9:00 AM to 9:30 AM
Required Attendees: Jacobs, Brittany

Agenda:

1) PFOA/S need for additional folks – Todd Blessinger, statistician
2) GenX – questions about BMR % and relative severity
3) TT TO tech edit instructions for GenX and estimated cost?
4) Other?

Microsoft Teams meeting

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Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 8/6/2021 4:16:41 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: from Betsy re GenX

GenX to Deborah – some process questions

Ex. 5 Deliberative Process (DP)

Let me know if you need to talk through any of the above.

Sue

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 8/6/2021 7:48:48 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: RE: from Betsy re GenX

Hi Brittany,

You are correct – the NHANES study.

Your plan makes a lot of sense. I like this splitting up of the RTC and the document – it probably helps Deborah as well.

I will cc you on sending forward the document.

Have a great weekend,
Sue

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Friday, August 6, 2021 1:49 PM
To: Euling, Susan <Euling.Susan@epa.gov>
Subject: RE: from Betsy re GenX

Okay, the only study I think that needs to be added to the assessment is the NHANES study that we got from NC/Calafat. I probably will need until Monday to get that done. Everything else I addressed.

Attached is the clean and track change version of the response to comment document for Deborah's review.

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Friday, August 6, 2021 12:27 PM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: RE: from Betsy re GenX

one more thing, added below:

From: Euling, Susan
Sent: Friday, August 6, 2021 12:17 PM
To: Jacobs, Brittany <Jacobs.Brittany@epa.gov>
Subject: from Betsy re GenX

GenX to Deborah – some process questions

a.
b.

Ex. 5 Deliberative Process (DP)

c.

Ex. 5 Deliberative Process (DP)

d.

Let me know if you need to talk through any of the above.

Sue

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 8/6/2021 7:58:27 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: RE: GenX Tech Edit Technical Direction Revised

Hi Brittany,

I reviewed the tech direction and it looks good. I have nothing more to add. I think the schedule is the tricky part but since we want to move on this, I think having a meeting with TT to discuss now, even though you aren't ready to hand the doc to them, is a good idea.

Could you clean it up and send it to Shamima as the COR for the TO and say that this will be needed soon – late August/ealry September timeframe and that you would like to set up a call to clarify any questions they may have?

Let me know if you need anything else.

Sue

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Friday, August 6, 2021 11:55 AM
To: Euling, Susan <Euling.Susan@epa.gov>
Subject: GenX Tech Edit Technical Direction Revised

Hi Sue,

I've revised the technical direction for the GenX tech edit based on your comments and the revisions I made to the documents. Let me know if you have additional edits/comments. I'm not sure what our next steps should be with this since we aren't sure of our schedule. Let me know.

Britt

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 8/6/2021 9:23:24 PM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: RE: GenX response to peer review comments

Yippee! a good way to start the weekend.

Thanks,
Sue

From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Friday, August 6, 2021 4:10 PM
To: Nagle, Deborah <Nagle.Deborah@epa.gov>
Cc: Euling, Susan <Euling.Susan@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: GenX response to peer review comments
Importance: High

Deborah,
It is my great pleasure to send you our response to comments from the second peer review of the GenX toxicity assessment. Brittany has completed the revisions (clean and track changes versions attached). The track changes version shows both my and Sue's comments. There were not many, as Brittany did a fabulous job. It isn't long.

This is a very gratifying read. Thanks for helping us fend off political interference on this assessment in January. We have an assessment we can stand behind!

Brittany is almost done with the GenX assessment document and plans to send on for your review (Sue to Colleen to you) on Monday. This is a longer document, but you may want to focus on the parts that changes in the track changes version.

Happy reading☺,
Betsy

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 8/9/2021 4:59:43 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: FW: response to public comments
Attachments: EPA Response to Public Comments on Draft AWQC.docx

Here is an example of a response to public comments that Colleen thought could be helpful for preparing the GenX RTPC.

Sue

From: Flaherty, Colleen <Flaherty.Colleen@epa.gov>
Sent: Monday, August 9, 2021 12:56 PM
To: Euling, Susan <Euling.Susan@epa.gov>
Subject: response to public comments

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 8/10/2021 4:11:58 AM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]
CC: Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: RE: GenX Final Assessment and Response to Second Peer Review for your review

Thanks for the explanation of the status. That's great that there isn't much more to be done to revise the RTPC.

Sue

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Monday, August 9, 2021 1:09 PM
To: Euling, Susan <Euling.Susan@epa.gov>; Behl, Betsy <Behl.Betsy@epa.gov>
Cc: Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: GenX Final Assessment and Response to Second Peer Review for your review

Hi Sue,

Ex. 5 Deliberative Process (DP)

Britt

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Monday, August 9, 2021 12:07 PM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>; Behl, Betsy <Behl.Betsy@epa.gov>
Cc: Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: GenX Final Assessment and Response to Second Peer Review for your review

This is fantastic news. Thank you Brittany and Greg for carefully going through the remaining comments. Wow, also good to hear that 80 pages were dropped due to change in SR methods.

Let me take a look and then send on to Colleen to send to Deborah.

Colleen said that Deborah will need to review the public comment responses since it is typical to provide RTC for the public comments as well. This does not need to go to Deborah right away though since she is fine receiving these docs separately. Grouping comments by categories is helpful. Is this something that Tetratech could help with?

Sue

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Monday, August 9, 2021 10:59 AM
To: Euling, Susan <Euling.Susan@epa.gov>; Behl, Betsy <Behl.Betsy@epa.gov>
Cc: Miller, GregoryG <Miller.Gregory@epa.gov>

Subject: RE: GenX Final Assessment and Response to Second Peer Review for your review
Importance: High

Good Morning,

Attached are clean and track change versions of the assessment for Deborah's review. Sue, I incorporated your edits outlined below and had Greg look over our interpretation of the NTP definition of adverse. I've addressed Betsy's main concerns:

- [redacted]
- [redacted]
- [redacted]

It was [redacted]
shave[redacted]

Let me [redacted]
help fo[redacted]

- [redacted]
- [redacted]
- [redacted]
- [redacted]

Ex. 5 Deliberative Process (DP)

Thanks again for the edits and time spent going through the document. I will move on to the Response to Public Comment Document next. Does this also need to be sent to Deborah?

All the best,
Britt

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Friday, August 6, 2021 5:19 PM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>; Behl, Betsy <Behl.Betsy@epa.gov>
Cc: Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: GenX Final Assessment and Response to Second Peer Review for your review

Hi Brittany,

One thing that continues to impress me is the NTP PWG assessment of the liver lesions. It is an impressive effort and it makes the document so strong.

Ex. 5 Deliberative Process (DP)

If you have any questions about these additional comments, please let me know.

I know that you are also adding in the NHANES data based on Betsy's request to include the biomonitoring information on limitations of those studies (e.g., blood limit of detection etc.).

Thanks,
Sue

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Friday, August 6, 2021 11:41 AM
To: Behl, Betsy <Behl.Betsy@epa.gov>; Euling, Susan <Euling.Susan@epa.gov>
Cc: Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: GenX Final Assessment and Response to Second Peer Review for your review
Importance: High

Great! Thanks to you both for your review and helpful edits. I have gone back through and addressed comments. Sue, look at the very last section of the assessment (8.8) for updates to susceptible populations based on our conversation this morning. If you both are satisfied with the responses/edits, I can get the documents cleaned up for Deborah's review. I would like to keep the comment bubbles specific for the Tech Edit so Deborah knows there is still some work to be done to make the documents pretty and doesn't spend time calling out formatting, etc issues. Let me know!

From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Thursday, August 5, 2021 7:07 PM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>; Euling, Susan <Euling.Susan@epa.gov>
Cc: Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: GenX Final Assessment and Response to Second Peer Review for your review

One small comment on the response to comments. Awesome. I will give you a call tomorrow to see if you had any questions , otherwise, lets get it to Deborah next week!

Congratulations. It was a pleasure to read the peer reviewer comments after all we went through.

B

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Friday, July 30, 2021 9:43 AM
To: Behl, Betsy <Behl.Betsy@epa.gov>; Euling, Susan <Euling.Susan@epa.gov>
Cc: Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: GenX Final Assessment and Response to Second Peer Review for your review
Importance: High

Good Morning,

I'm extremely happy to send you the GenX final assessment and response to the second peer review for your review. I am attaching them as links since there are multiple reviewers. The assessment is in track changes so you can see what has changed since the second peer review. Note we will need a tech edit on these documents and I have call outs to Tetra Tech for the tech edit in comment bubbles.

Highlighted below are the sections where most of the editing was done in the assessment if you want to focus your review:

-
-
-
-
-

Ex. 5 Deliberative Process (DP)

There weren't too many responses needed in the response to peer review comments, but the comments needing responses were pretty meaty. I realized that I need to double check the response to public comment document and update according to the changes I made in the assessment. For example, I know the response to the comments on the systematic review need to change. I will do that once I get your comments back on these documents.

Let me know if you have any questions. I look forward to your edits and feedback!

All the best,
Brittany

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 8/17/2021 4:31:05 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: GenX

from Betsy:

From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Tuesday, August 17, 2021 12:26 PM
To: Euling, Susan <Euling.Susan@epa.gov>
Subject: RE: quick question

She plans to get back to us before she leaves.

Elizabeth (Betsy) Behl, Director Health and Ecological Criteria Division,
Office of Science and Technology, Office of Water, EPA
Office: 202-566-0788
Cell: Ex. 6 Personal Privacy (PP)

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Tuesday, August 17, 2021 12:23 PM
To: Behl, Betsy <Behl.Betsy@epa.gov>; Flaherty, Colleen <Flaherty.Colleen@epa.gov>
Subject: RE: quick question

Thanks – would it be possible to learn her thinking on either the draft itself or what she is thinking re OW IO review before she goes on vacation?

Thanks,
Sue

From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Tuesday, August 17, 2021 12:07 PM
To: Euling, Susan <Euling.Susan@epa.gov>; Flaherty, Colleen <Flaherty.Colleen@epa.gov>
Subject: RE: quick question

She is out on wed through tuesday

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Tuesday, August 17, 2021 10:55 AM
To: Flaherty, Colleen <Flaherty.Colleen@epa.gov>; Behl, Betsy <Behl.Betsy@epa.gov>
Subject: quick question

relates to GenX review…is Deborah out starting Wed or Thurs of this week? And then returning next Tues or Wed?

Thanks,
Sue

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 8/25/2021 9:51:53 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: FW: review of GenX RTC for public comments

FYI

From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Wednesday, August 25, 2021 12:52 PM
To: Euling, Susan <Euling.Susan@epa.gov>
Subject: RE: review of GenX RTC for public comments

I will look at your version. That should make it easier for Brittany

---

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Wednesday, August 25, 2021 12:51 PM
To: Behl, Betsy <Behl.Betsy@epa.gov>
Subject: FW: review of GenX RTC for public comments

Hi Betsy,

Feel free to review my track changes version (attached) or wait for Brittany to provide a clean version – your choice. It may be easier to review this version since she is swamped with PFOA/S right in the middle of this week.

Our goal is to get it to Deborah when she is back from her vacation next Wed?

Sue

From: Euling, Susan
Sent: Wednesday, August 25, 2021 9:30 AM
To: Jacobs, Brittany <Jacobs.Brittany@epa.gov>
Cc: Behl, Betsy <Behl.Betsy@epa.gov>
Subject: review of GenX RTC for public comments

Hi Brittany,

Attached are my suggested edits and comments on the RTC for public comments. Overall, the RTC looks very good!

There are a lot of edits because I think it is important to be careful with responses to public comments.

Most of my comments fall into these categories –

1)
2)

Ex. 5 Deliberative Process (DP)

3)

4)

5)

Ex. 5 Deliberative Process (DP)

Sue

Appointment

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 8/24/2021 3:24:05 PM
To: Flaherty, Colleen [Flaherty.Colleen@epa.gov]; Lalley, Cara [Lalley.Cara@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]

Subject: GenX comms materials disc
Location: Microsoft Teams Meeting

Start: 8/25/2021 12:30:00 PM
End: 8/25/2021 1:00:00 PM
Show Time As: Tentative

Required Attendees: Flaherty, Colleen; Lalley, Cara; Jacobs, Brittany

Agenda:

Identify the components of the comms materials for GenX needed, coordinating review, and timing:

Doc	When Cara and Colleen need to receive for review	Uncertainties/Questions
FRN		
Comms plan (template)		
General Public fact sheet		Does Q&A go here?
Technical fact sheet		

are we missing anything? What if we end up briefing the administrator – we would need a briefing one pager or something else?

Microsoft Teams meeting

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Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 8/25/2021 12:42:48 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: RE: GenX comms materials disc

Hi Brittany,

My intention was for the two of us to meet this morning (without Cara and Colleen) to discuss. Then I was late to the meeting! Anyway, if you are available, we could chat about it for 15 min.

Sue

-----Original Appointment-----
From: Euling, Susan
Sent: Tuesday, August 24, 2021 11:24 AM
To: Euling, Susan; Jacobs, Brittany
Subject: GenX comms materials disc
When: Wednesday, August 25, 2021 8:30 AM-9:00 AM (UTC-05:00) Eastern Time (US & Canada).
Where: Microsoft Teams Meeting

Keeping this meeting for the two of us to discuss.

Agenda:

Identify the components of the comms materials for GenX needed, coordinating review, and timing:

Doc	When Cara and Colleen need to receive for review	Uncertainties/Questions
FRN		
Comms plan (template)		
General Public fact sheet		Does Q&A go here?
Technical fact sheet		

are we missing anything? What if we end up briefing the administrator – we would need a briefing one pager or something else?

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Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 8/25/2021 1:30:26 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]
CC: Behl, Betsy [Behl.Betsy@epa.gov]
Subject: review of GenX RTC for public comments
Attachments: GenX Assessment Resp to Public Comments_Tech Edit_7.27.2020 sye review.docx

Hi Brittany,

Attached are my suggested edits and comments on the RTC for public comments. Overall, the RTC looks very good!

There are a lot of edits because I think it is important to be careful with responses to public comments.

Most of my comments fall into these categories –

1)
2)
3)
4)
5)

Ex. 5 Deliberative Process (DP)

Sue

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 8/26/2021 7:46:08 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: RE: PFAS meeting at 3pm

Yes!!! Agree!

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Thursday, August 26, 2021 3:45 PM
To: Euling, Susan <Euling.Susan@epa.gov>
Subject: RE: PFAS meeting at 3pm

Ex. 5 Deliberative Process (DP)

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Thursday, August 26, 2021 2:16 PM
To: Lindberg, Casey <Lindberg.Casey@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: RE: PFAS meeting at 3pm

Now it looks like it will Ryan Albert but yes, would think that is OGWDW's area.

Ex. 5 Deliberative Process (DP)

Sue

From: Lindberg, Casey <Lindberg.Casey@epa.gov>
Sent: Thursday, August 26, 2021 2:05 PM
To: Euling, Susan <Euling.Susan@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: RE: PFAS meeting at 3pm

Yes, you could bring up the 29 proposed UCMR 5 PFAS chemicals. This is also OGWDW purview so hopefully Hannah will cover it.

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Thursday, August 26, 2021 1:58 PM
To: Lindberg, Casey <Lindberg.Casey@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: RE: PFAS meeting at 3pm

Hi Casey and Brittany,

Thanks so much for the fast turnaround. For c, I could also bring up the 29 PFAS proposed for UCMR5, correct?

I'm asking Betsy what can be said about commitment to develop HAs for the PFAS as tox assessments are completed.

Anything else?

Looks like Hannah can make the call which is great.

Sue

From: Lindberg, Casey <Lindberg.Casey@epa.gov>
Sent: Thursday, August 26, 2021 1:50 PM
To: Euling, Susan <Euling.Susan@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: RE: PFAS meeting at 3pm

Hi Sue,

Brittany and I put our heads together on this earlier. A few thoughts are added below.
Thanks,
Casey

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Thursday, August 26, 2021 12:46 PM
To: Lindberg, Casey <Lindberg.Casey@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: PFAS meeting at 3pm
Importance: High

Hi Casey and Brittany,

I just forwarded this meeting invite to you. You are welcome to attend but do not need to attend. However, I'd like to get your help prepping for the meeting. Below are the 3 questions that they have for OW. In yellow, I have added some basic info to response. Please add to what I have provided.

Thanks for your help. I'll then check in with Betsy about the politics.

Sue

At the meeting, OW will be asked to summarize:

a.

b.

Ex. 5 Deliberative Process (DP)

c.

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 8/26/2021 4:46:29 PM
To: Lindberg, Casey [Lindberg.Casey@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: PFAS meeting at 3pm

Importance: High

Hi Casey and Brittany,

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Ex. 5 Deliberative Process (DP)

Message

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Sent: 8/26/2021 7:46:48 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: RE: PFAS meeting at 3pm

Ex. 5 Deliberative Process (DP)

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Thursday, August 26, 2021 3:45 PM
To: Euling, Susan <Euling.Susan@epa.gov>
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Subject: RE: PFAS meeting at 3pm

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Ex. 5 Deliberative Process (DP)

Sue

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Sent: Thursday, August 26, 2021 2:05 PM
To: Euling, Susan <Euling.Susan@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: RE: PFAS meeting at 3pm

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Sent: Thursday, August 26, 2021 12:46 PM
To: Lindberg, Casey <Lindberg.Casey@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
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Importance: High

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Sue

At the meeting, OW will be asked to summarize:

a.

b.

Ex. 5 Deliberative Process (DP)

c.

Appointment

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 8/27/2021 1:22:35 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]

Subject: HRAB one-on-one: Brittany
Location: Microsoft Teams Meeting

Start: 8/27/2021 2:30:00 PM
End: 8/27/2021 3:00:00 PM
Show Time As: Tentative

Recurrence: Weekly
every Thursday from 9:00 AM to 9:30 AM
Required Attendees: Jacobs, Brittany

Agenda:

1) PFOA/S
    a. Backup needed?
    b. ORD requests vs. ICF TO mod
    c. Meta analysis issue – where are we?
    d. 3rd TO mod for response to comments for the combined tox doc
    e. Epi: Status; Any data/health outcomes suitable for the basis for RfD?; Benefits analysis
    f. Timing issues
2) GenX
    a. Betsy probably done with RTC public by Mon
    b. table fr Kelly (any new docs for GenX assessment?)
    c. Comms materials
    d. FRN
3) PFAS TSCA mtg
4) Biologist pos candidates

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Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 8/26/2021 8:09:44 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]
Subject: FW: Discussion with OW on current PFAS actions/activities
Attachments: sanitized_consent_order_p_09_0477c (1) (003).pdf

Ex. 5 Deliberative Process (DP)

Sue

From: Alwood, Jim <Alwood.Jim@epa.gov>
Sent: Thursday, August 26, 2021 4:02 PM
To: Lewis, Samantha <Lewis.Samantha@epa.gov>; Flanders, Phillip <Flanders.Phillip@epa.gov>; Le, Madison <Le.Madison@epa.gov>; Tobias, David <Tobias.David@epa.gov>; Sadowsky, Don <Sadowsky.Don@epa.gov>; Kaczmarek, Chris <Kaczmarek.Chris@epa.gov>; Huskey, Angela <Huskey.Angela@epa.gov>; Miles, James <miles.james@epa.gov>; Garvey, Mark <Garvey.Mark@epa.gov>; Euling, Susan <Euling.Susan@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>
Cc: Edelstein, Rebecca <Edelstein.Rebecca@epa.gov>; Lloyd, Tyler <Lloyd.Tyler@epa.gov>; Wysong, William <wysong.william@epa.gov>; Hanley, Adrian <Hanley.Adrian@epa.gov>; Schwarz, Stephanie <Schwarz.Stephanie@epa.gov>; Passe, Loraine <Passe.Loraine@epa.gov>; Milton, Philip <Milton.Philip@epa.gov>; Ellis, Tony <Ellis.Tony@epa.gov>; Bahk, Benjamin <Bahk.Benjamin@epa.gov>; Lindberg, Casey <Lindberg.Casey@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>; Albert, Ryan <Albert.Ryan@epa.gov>; Lan, Alexis <lan.alexis@epa.gov>; Gallagher, Kathryn <Gallagher.Kathryn@epa.gov>; Behl, Betsy <Behl.Betsy@epa.gov>
Subject: RE: Discussion with OW on current PFAS actions/activities

As just discussed at the meeting.

Jim Alwood
Acting Branch Chief
Risk Management Branch 1
EPA East
1200 Pennsylvania Ave. NW
Room 4133J, Mail Code 7405M
Washington, DC 20460
202 564-8974
Fax 202 564 9490

-----Original Appointment-----
From: Alwood, Jim
Sent: Tuesday, August 24, 2021 2:29 PM
To: Alwood, Jim; Lewis, Samantha; Flanders, Phillip; Le, Madison; Tobias, David; Sadowsky, Don; Kaczmarek, Chris;

Huskey, Angela; Miles, James; Garvey, Mark; Euling, Susan; Huff, Lisa
Cc: Edelstein, Rebecca; Lloyd, Tyler; Wysong, William; Hanley, Adrian; Schwarz, Stephanie; Passe, Loraine; Milton, Philip; Ellis, Tony; Bahk, Benjamin; Lindberg, Casey; Jacobs, Brittany; Albert, Ryan; Lan, Alexis; Gallagher, Kathryn; Behl, Betsy
Subject: Discussion with OW on current PFAS actions/activities
When: Thursday, August 26, 2021 3:00 PM-4:00 PM (UTC-05:00) Eastern Time (US & Canada).
Where: Microsoft Teams Meeting

Updating with additional invitees.

Microsoft Teams meeting

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Appointment

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 9/1/2021 1:51:06 PM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]

Subject: GenX discussion
Location: Microsoft Teams Meeting

Start: 9/1/2021 5:30:00 PM
End: 9/1/2021 6:00:00 PM
Show Time As: Tentative

Required Attendees: Behl, Betsy; Miller, GregoryG; Jacobs, Brittany

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Appointment

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 8/31/2021 4:58:18 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]

Subject: Mtg #2: GenX RTC public
Attachments: GenX Assessment Resp to Public Comments_Tech Edit_7.27.2020 sye review bb.docx
Location: Microsoft Teams Meeting

Start: 9/1/2021 7:00:00 PM
End: 9/1/2021 8:00:00 PM
Show Time As: Tentative

Required Attendees: Jacobs, Brittany; Miller, GregoryG

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Appointment

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 8/31/2021 4:57:22 PM
To: Miller, GregoryG [Miller.Gregory@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]

Subject: Mtg #1: GenX resolve comments working mtg
Attachments: GenX Assessment Resp to Public Comments_Tech Edit_7.27.2020 sye review bb.docx
Location: Microsoft Teams Meeting

Start: 8/31/2021 7:30:00 PM
End: 8/31/2021 8:30:00 PM
Show Time As: Tentative

Required Attendees: Miller, GregoryG; Jacobs, Brittany

Microsoft Teams meeting

Join on your computer or mobile app
Click here to join the meeting

Or call in (audio only)

Ex. 6 Personal Privacy (PP) es, Washington DC

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Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 9/1/2021 4:54:25 PM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: RE: genX for radhika

Suggested edits to the email blurb –

Ex. 5 Deliberative Process (DP)

From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Wednesday, September 1, 2021 12:47 PM
To: Euling, Susan <Euling.Susan@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: genX for radhika

That is an excellent suggestion. thanks

Elizabeth (Betsy) Behl, Director Health and Ecological Criteria Division,
Office of Science and Technology, Office of Water, EPA
Office: 202-566-0788
Cell: Ex. 6 Personal Privacy (PP)

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Wednesday, September 1, 2021 12:46 PM
To: Behl, Betsy <Behl.Betsy@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: genX for radhika

Ex. 5 Deliberative Process (DP)

Sue

From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Wednesday, September 1, 2021 12:16 PM
To: Euling, Susan <Euling.Susan@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: genX for radhika

So this is my attempt at the one pager (3 pages) in light of the conversation with ORD. your feedback is appreciated. I need to get Deborah's take as well and I think today is her last day this week.

From: Behl, Betsy
Sent: Tuesday, August 31, 2021 7:23 PM
To: Euling, Susan <Euling.Susan@epa.gov>; Jacobs, Brittany <Jacobs.Brittany@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: genX for radhika

This is the GenX blurb I drafted for next week's biweekly. Above is a draft one pager I drafted to elicit decisions. Attached is also a revised draft timeline. Lets find a time tomorrow to discuss this all. Maybe if the GenX/PFAS meeting runs short.

Ex. 5 Deliberative Process (DP)

Elizabeth (Betsy) Behl, Director Health and Ecological Criteria Division,
Office of Science and Technology, Office of Water, EPA
Office: 202-566-0788
Cell: Ex. 6 Personal Privacy (PP)

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 9/1/2021 4:45:47 PM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: RE: genX for radhika
Attachments: GenX next steps 082921 ver 2 BB sye review.docx

Ex. 5 Deliberative Process (DP)

Sue

From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Wednesday, September 1, 2021 12:16 PM
To: Euling, Susan <Euling.Susan@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: genX for radhika

So this is my attempt at the one pager (3 pages) in light of the conversation with ORD. your feedback is appreciated. I need to get Deborah's take as well and I think today is her last day this week.

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Ex. 5 Deliberative Process (DP)

Elizabeth (Betsy) Behl, Director Health and Ecological Criteria Division,

Office of Science and Technology, Office of Water, EPA
Office: 202-566-0788
Cell: Ex. 6 Personal Privacy (PP)

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 9/1/2021 6:16:12 PM
To: Flaherty, Colleen [Flaherty.Colleen@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: RE: GenX - finished comments/edits on public fact sheet

Thanks Colleen for leading the effort and prodding us on.

From: Flaherty, Colleen <Flaherty.Colleen@epa.gov>
Sent: Wednesday, September 1, 2021 1:24 PM
To: Euling, Susan <Euling.Susan@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: RE: GenX - finished comments/edits on public fact sheet

Take a look. Hope I captured everything correctly. If not, fix it!

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Wednesday, September 1, 2021 1:00 PM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>; Flaherty, Colleen <Flaherty.Colleen@epa.gov>
Subject: RE: GenX - finished comments/edits on public fact sheet

OK no worries. Glad you caught it!

Thanks,
Sue

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Wednesday, September 1, 2021 1:00 PM
To: Euling, Susan <Euling.Susan@epa.gov>; Flaherty, Colleen <Flaherty.Colleen@epa.gov>
Subject: RE: GenX - finished comments/edits on public fact sheet

Sorry, I just double checked the numbers and the subchronic RfD I put in from the draft document is wrong. I will update it and then I think we can keep them in because it is a significant change. Apologies for my error, didn't have time to double check until now. So scratch my previous email.

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Wednesday, September 1, 2021 12:57 PM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>; Flaherty, Colleen <Flaherty.Colleen@epa.gov>
Subject: RE: GenX - finished comments/edits on public fact sheet

Ex. 5 Deliberative Process (DP)

Sue

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Wednesday, September 1, 2021 12:54 PM

To: Flaherty, Colleen <Flaherty.Colleen@epa.gov>; Euling, Susan <Euling.Susan@epa.gov>
Subject: RE: GenX - finished comments/edits on public fact sheet

Ex. 5 Deliberative Process (DP)

From: Flaherty, Colleen <Flaherty.Colleen@epa.gov>
Sent: Wednesday, September 1, 2021 11:56 AM
To: Euling, Susan <Euling.Susan@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: RE: GenX - finished comments/edits on public fact sheet

OK, I cleaned it up. Britt, there's just a couple of spots for you to add language, then I'll share with Betsy. We could add short chain to the tech fact sheet if you want.

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Wednesday, September 1, 2021 11:52 AM
To: Flaherty, Colleen <Flaherty.Colleen@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: RE: GenX - finished comments/edits on public fact sheet

noticed we do not flag GenX chemicals as short-chain. Add to the Technical Fact Sheet?

From: Euling, Susan
Sent: Wednesday, September 1, 2021 11:37 AM
To: Flaherty, Colleen <Flaherty.Colleen@epa.gov>; Jacobs, Brittany <Jacobs.Brittany@epa.gov>
Subject: GenX - finished comments/edits on public fact sheet

I finished my comments. See that you are in there. I have one place for Brittany to check.

Two points:

1)

2)

Ex. 5 Deliberative Process (DP)

Who is responsible for finalizing the draft? If it is me, please let me know!

Thanks,
Sue

Appointment

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 9/1/2021 8:26:54 PM
To: Miller, GregoryG [Miller.Gregory@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]

Subject: #3 GenX RTC working mtg
Location: Microsoft Teams Meeting

Start: 9/7/2021 4:00:00 PM
End: 9/7/2021 5:00:00 PM
Show Time As: Tentative

Required Attendees: Miller, GregoryG; Jacobs, Brittany

Final session

Microsoft Teams meeting

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Ex. 6 Personal Privacy (PP) es, Washington DC

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Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 9/1/2021 5:04:11 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Flaherty, Colleen [Flaherty.Colleen@epa.gov]
Subject: RE: GenX - finished comments/edits on public fact sheet

Ex. 5 Deliberative Process (DP)

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Wednesday, September 1, 2021 1:02 PM
To: Euling, Susan <Euling.Susan@epa.gov>; Flaherty, Colleen <Flaherty.Colleen@epa.gov>
Subject: RE: GenX - finished comments/edits on public fact sheet

I'm wondering if we still want to just focus on the chronic RfD for the public fact sheet?

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Wednesday, September 1, 2021 1:00 PM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>; Flaherty, Colleen <Flaherty.Colleen@epa.gov>
Subject: RE: GenX - finished comments/edits on public fact sheet

OK no worries. Glad you caught it!

Thanks,
Sue

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Wednesday, September 1, 2021 1:00 PM
To: Euling, Susan <Euling.Susan@epa.gov>; Flaherty, Colleen <Flaherty.Colleen@epa.gov>
Subject: RE: GenX - finished comments/edits on public fact sheet

Ex. 5 Deliberative Process (DP)

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Wednesday, September 1, 2021 12:57 PM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>; Flaherty, Colleen <Flaherty.Colleen@epa.gov>
Subject: RE: GenX - finished comments/edits on public fact sheet

Ex. 5 Deliberative Process (DP)

Sue

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Sent: Wednesday, September 1, 2021 12:54 PM
To: Flaherty, Colleen <Flaherty.Colleen@epa.gov>; Euling, Susan <Euling.Susan@epa.gov>
Subject: RE: GenX - finished comments/edits on public fact sheet

Ex. 5 Deliberative Process (DP)

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Sent: Wednesday, September 1, 2021 11:56 AM
To: Euling, Susan <Euling.Susan@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: RE: GenX - finished comments/edits on public fact sheet

OK, I cleaned it up. Britt, there's just a couple of spots for you to add language, then I'll share with Betsy. We could add short chain to the tech fact sheet if you want.

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Wednesday, September 1, 2021 11:52 AM
To: Flaherty, Colleen <Flaherty.Colleen@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: RE: GenX - finished comments/edits on public fact sheet

noticed we do not flag GenX chemicals as short-chain. Add to the Technical Fact Sheet?

From: Euling, Susan
Sent: Wednesday, September 1, 2021 11:37 AM
To: Flaherty, Colleen <Flaherty.Colleen@epa.gov>; Jacobs, Brittany <Jacobs.Brittany@epa.gov>
Subject: GenX - finished comments/edits on public fact sheet

I finished my comments. See that you are in there. I have one place for Brittany to check.

Two points:

1)

2)

Ex. 5 Deliberative Process (DP)

Who is responsible for finalizing the draft? If it is me, please let me know!

Thanks,
Sue

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 9/1/2021 8:26:01 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: latest version RTC public GenX
Attachments: 083121 ver GenX Assessment Resp to Public Comments_Tech Edit_7.27.2020 sye review bb.docx

Hi Greg and Brittany,

The latest version post-our two working meetings.

I'll set up another mtg for Monday.

Sue

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 8/31/2021 3:09:05 PM
To: Miller, GregoryG [Miller.Gregory@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: FW: review of GenX RTC for public comments
Attachments: GenX Assessment Resp to Public Comments_Tech Edit_7.27.2020 sye review bb.docx

Hi Greg and Brittany,

Are you both too strapped for time to deal with this? If so, we could take an hour and walk through and revise. I could set up the meeting. Let me know.

I can assist with vetting the RTC with OLEM, ORD, or OPPT when ready.

Sue

From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Tuesday, August 31, 2021 10:51 AM
To: Euling, Susan <Euling.Susan@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: RE: review of GenX RTC for public comments

Ex. 5 Deliberative Process (DP)

Very nice job.

Betsy

Elizabeth (Betsy) Behl, Director Health and Ecological Criteria Division,
Office of Science and Technology, Office of Water, EPA
Office: 202-566-0788
Cell: Ex. 6 Personal Privacy (PP)

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Wednesday, August 25, 2021 9:30 AM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>
Cc: Behl, Betsy <Behl.Betsy@epa.gov>
Subject: review of GenX RTC for public comments

Hi Brittany,

Attached are my suggested edits and comments on the RTC for public comments. Overall, the RTC looks very good!

There are a lot of edits because I think it is important to be careful with responses to public comments.

Most of my comments fall into these categories –

1)
2)
3)
4)
5)

Ex. 5 Deliberative Process (DP)

Sue

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 9/7/2021 2:57:28 AM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]
CC: Flaherty, Colleen [Flaherty.Colleen@epa.gov]
Subject: Please review GenX text today 9/7/21: PFAS ORD report
Attachments: PFAS Study Report_All Sections_To EPA_2021.09.03 sye ost edits 090621.docx

Hi Brittany and Greg,

I made some edits (attached). Please do a search for GenX to find the changes.

In particular, please look at

- **Ex. 5 Deliberative Process (DP)**

Please review all edits that I have made and revise or OK these edits. I wish we could wait to put the final values in their document but such is life! The hope is to revise by the time their document is finalized.

Thanks,
Sue

From: Rexhepi, Doruntine <Rexhepi.Doruntine@epa.gov>
Sent: Monday, September 6, 2021 10:11 PM
To: Euling, Susan <Euling.Susan@epa.gov>
Cc: Damico, Brian <Damico.Brian@epa.gov>; Flaherty, Colleen <Flaherty.Colleen@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: RE: GenX

Hi Sue,

Please find attached our final report. Please review the language on GenX and let us know if you agree (Section 3.4 and Table 3), preferably by COB Tuesday (9/7).

Thanks,
Dori

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Wednesday, September 1, 2021 9:25 AM
To: Rexhepi, Doruntine <Rexhepi.Doruntine@epa.gov>
Cc: Damico, Brian <Damico.Brian@epa.gov>; Flaherty, Colleen <Flaherty.Colleen@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: RE: GenX

Thank you so much Dori.

We will let you know when GenX is final.

Sue

From: Rexhepi, Doruntine <Rexhepi.Doruntine@epa.gov>
Sent: Wednesday, September 1, 2021 9:14 AM
To: Euling, Susan <Euling.Susan@epa.gov>
Cc: Damico, Brian <Damico.Brian@epa.gov>
Subject: RE: GenX

Hi Sue,

Apologies for not getting back to you earlier.

That is correct – we will publish the Preliminary Report first, request public comment and then publish a final report. As advised, we will keep the current GenX values (stating they are not final), and on the final report we will be sure to include any updated values.

We will share our final draft report once it's available.

Thanks again,
Dori

Doruntinë Rexhepi | Environmental Engineer

U.S EPA - Office of Water
Engineering and Analysis Division
Office: (202) 566-2532
www.epa.gov/eg

From: Damico, Brian <Damico.Brian@epa.gov>
Sent: Friday, August 20, 2021 3:27 PM
To: Rexhepi, Doruntine <Rexhepi.Doruntine@epa.gov>
Subject: Fwd: GenX

-B

Brian D'Amico
Chief, Technology and Analytical Support Branch
Engineering and Analysis Division
Office of Science and Technology
U.S. Environmental Protection Agency
Washington, DC
(202) 566-1069
(202) 384-2190

Begin forwarded message:

> **From:** "Euling, Susan" <Euling.Susan@epa.gov>
> **Date:** August 20, 2021 at 3:17:37 PM EDT

To: "Damico, Brian" <Damico.Brian@epa.gov>
Subject: FW: GenX

Hi Brian,

Ex. 5 Deliberative Process (DP)

Please share the GenX draft language and the table of values with me before you finalize your Preliminary Report. I appreciate it.

Thanks and have a good weekend!

Sue

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 9/7/2021 2:52:45 AM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]
CC: Flaherty, Colleen [Flaherty.Colleen@epa.gov]
Subject: FW: GenX
Attachments: PFAS Study Report_All Sections_To EPA_2021.09.03.docx

Hi Brittany and Greg,

I made some edits and added a comment (Table 3). Do a search for GenX to find the changes.

Ex. 5 Deliberative Process (DP)

Please also look at the other edits that I have made and revise or OK these edits.

Thanks,
Sue

From: Rexhepi, Doruntine <Rexhepi.Doruntine@epa.gov>
Sent: Monday, September 6, 2021 10:11 PM
To: Euling, Susan <Euling.Susan@epa.gov>
Cc: Damico, Brian <Damico.Brian@epa.gov>; Flaherty, Colleen <Flaherty.Colleen@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: RE: GenX

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To: Rexhepi, Doruntine <Rexhepi.Doruntine@epa.gov>
Cc: Damico, Brian <Damico.Brian@epa.gov>; Flaherty, Colleen <Flaherty.Colleen@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: RE: GenX

Thank you so much Dori.

We will let you know when GenX is final.

Sue

From: Rexhepi, Doruntine <Rexhepi.Doruntine@epa.gov>
Sent: Wednesday, September 1, 2021 9:14 AM
To: Euling, Susan <Euling.Susan@epa.gov>
Cc: Damico, Brian <Damico.Brian@epa.gov>
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Thanks again,
Dori

Doruntinë Rexhepi | Environmental Engineer

U.S EPA - Office of Water
Engineering and Analysis Division
Office: (202) 566-2532
www.epa.gov/eg

From: Damico, Brian <Damico.Brian@epa.gov>
Sent: Friday, August 20, 2021 3:27 PM
To: Rexhepi, Doruntine <Rexhepi.Doruntine@epa.gov>
Subject: Fwd: GenX

-B

Brian D'Amico
Chief, Technology and Analytical Support Branch
Engineering and Analysis Division
Office of Science and Technology
U.S. Environmental Protection Agency
Washington, DC
(202) 566-1069
(202) 384-2190

Begin forwarded message:

> **From:** "Euling, Susan" <Euling.Susan@epa.gov>
> **Date:** August 20, 2021 at 3:17:37 PM EDT

To: "Damico, Brian" <Damico.Brian@epa.gov>
Subject: FW: GenX

Hi Brian,

Ex. 5 Deliberative Process (DP)

Please share the GenX draft language and the table of values with me before you finalize your Preliminary Report. I appreciate it.

Thanks and have a good weekend!

Sue

Appointment

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 9/7/2021 2:17:58 PM
To: Miller, GregoryG [Miller.Gregory@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]

Subject: #3 GenX RTC working mtg
Location: Microsoft Teams Meeting

Start: 9/7/2021 4:30:00 PM
End: 9/7/2021 5:00:00 PM
Show Time As: Tentative

Required Attendees: Miller, GregoryG; Jacobs, Brittany

Now Betsy has put the HECD mtg at 12-12:30pm…so this has shrunk. We will work fast!

Microsoft Teams meeting

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Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 9/7/2021 4:11:11 PM
To: Miller, GregoryG [Miller.Gregory@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]
CC: Flaherty, Colleen [Flaherty.Colleen@epa.gov]
Subject: RE: Please review GenX text today 9/7/21: PFAS ORD report

OK I'll add the comment that they need to ref the study.

OK done!

From: Miller, GregoryG <Miller.Gregory@epa.gov>
Sent: Tuesday, September 7, 2021 9:59 AM
To: Euling, Susan <Euling.Susan@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Cc: Flaherty, Colleen <Flaherty.Colleen@epa.gov>
Subject: RE: Please review GenX text today 9/7/21: PFAS ORD report

Ex. 5 Deliberative Process (DP)

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Tuesday, September 7, 2021 9:14 AM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Cc: Flaherty, Colleen <Flaherty.Colleen@epa.gov>
Subject: RE: Please review GenX text today 9/7/21: PFAS ORD report

Hi Brittany,

Ex. 5 Deliberative Process (DP)

Greg and Colleen, any other comments?

Thanks,
Sue

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Tuesday, September 7, 2021 8:07 AM
To: Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Cc: Flaherty, Colleen <Flaherty.Colleen@epa.gov>
Subject: RE: Please review GenX text today 9/7/21: PFAS ORD report

Overall, think the edits look fine. One place where I thought "component of GenX technology" should stay. I think they want LD50s so they have a tox value for all of the PFAS they are comparing (there isn't a RfD for 6:2 FTSA or 6:2 FTOH, but would be good to get clarification on how the GenX LD50 was calculated/where it was pulled from

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Monday, September 6, 2021 10:57 PM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
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Hi Sue,

Apologies for not getting back to you earlier.

That is correct – we will publish the Preliminary Report first, request public comment and then publish a final report. As advised, we will keep the current GenX values (stating they are not final), and on the final report we will be sure to include any updated values.

We will share our final draft report once it's available.

Thanks again,
Dori

Doruntinë Rexhepi | Environmental Engineer

U.S EPA - Office of Water
Engineering and Analysis Division
Office: (202) 566-2532
www.epa.gov/eg

From: Damico, Brian <Damico.Brian@epa.gov>
Sent: Friday, August 20, 2021 3:27 PM
To: Rexhepi, Doruntine <Rexhepi.Doruntine@epa.gov>
Subject: Fwd: GenX

-B

Brian D'Amico
Chief, Technology and Analytical Support Branch
Engineering and Analysis Division
Office of Science and Technology
U.S. Environmental Protection Agency
Washington, DC
(202) 566-1069
(202) 384-2190

Begin forwarded message:

> **From:** "Euling, Susan" <Euling.Susan@epa.gov>
> **Date:** August 20, 2021 at 3:17:37 PM EDT

To: "Damico, Brian" <Damico.Brian@epa.gov>
Subject: FW: GenX

Hi Brian,

Ex. 5 Deliberative Process (DP)

Please share the GenX draft language and the table of values with me before you finalize your Preliminary Report. I appreciate it.

Thanks and have a good weekend!

Sue

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 9/8/2021 2:07:58 PM
To: Miller, GregoryG [Miller.Gregory@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: FW: Gen X fact Sheet and next steps

Not wanting to distract you from PFOA/S so sending this as an FYI. No need to reply unless you want to take a look at these 2 questions from Elizabeth Cesar and have any other options for responding to her questions -

Sue

From: Euling, Susan
Sent: Wednesday, September 8, 2021 10:02 AM
To: Nagle, Deborah <Nagle.Deborah@epa.gov>; Behl, Betsy <Behl.Betsy@epa.gov>
Subject: RE: Gen X fact Sheet and next steps

Some ideas to respond to her 2 questions:

Ex. 5 Deliberative Process (DP)

Let me know if you need the public fact sheet revised (ASAP or later today?).

Thanks,
Sue

From: Nagle, Deborah <Nagle.Deborah@epa.gov>
Sent: Wednesday, September 8, 2021 9:54 AM
To: Behl, Betsy <Behl.Betsy@epa.gov>
Cc: Euling, Susan <Euling.Susan@epa.gov>
Subject: FW: Gen X fact Sheet and next steps

Elizabeth's comments on the GenX factsheet.

at first glance, I think all of these are fine – mostly editorial.

We should respond to her few questions.

-Deborah

From: Cisar, Elizabeth <Cisar.Elizabeth@epa.gov>
Sent: Wednesday, September 8, 2021 9:42 AM
To: Nagle, Deborah <Nagle.Deborah@epa.gov>
Subject: Gen X fact Sheet and next steps

Hi Deborah:
I have some suggested edits for the fact sheet. I understand these documents need to follow a certain format. I looked at the one for PFBS to try to make sure my edits would not interfere with that format.

When we talk about the options for next steps during the OST meeting, I would like to understand more about the pros and cons of the different options. I wanted to give you a heads up that I'm planning to ask questions about that.

Thanks!

Elizabeth Cisar (she, her)
Senior Advisor, Office of Water
US Environmental Protection Agency
Cisar.Elizabeth@epa.gov
Phone: (202)-564-4382; Cell: Ex. 6 Personal Privacy (PP)

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 9/9/2021 1:12:48 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: RE: 9/8 deadline for getting RTC for public comments to Deborah

OK, thanks. I'll add that to the list of final changes.

Sue

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Thursday, September 9, 2021 8:49 AM
To: Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: 9/8 deadline for getting RTC for public comments to Deborah

Hi Sue,

Ex. 5 Deliberative Process (DP)

back.

Britt

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Wednesday, September 8, 2021 10:51 PM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: 9/8 deadline for getting RTC for public comments to Deborah

Ex. 5 Deliberative Process (DP)

Thanks,
Sue

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Tuesday, September 7, 2021 5:01 PM
To: Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: 9/8 deadline for getting RTC for public comments to Deborah
Importance: High

Hi,

Here is my best effort on the response to public comment document. I've checked all of the technical aspects. All that is left is potentially referencing to other responses and some policy questions or having other office re-review certain responses.

Greg, can you weigh in on the response to 1.3.3.a

Thanks for your help on this.

Britt

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Thursday, September 2, 2021 2:41 PM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: 9/8 deadline for getting RTC for public comments to Deborah

Will good to get this on to Deborah.

Thanks,
Sue

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Thursday, September 2, 2021 2:30 PM
To: Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: 9/8 deadline for getting RTC for public comments to Deborah

Hi Sue,

Yes, this was my plan. Will just highlight the big issues for discussion on Tuesday.

Britt

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Thursday, September 2, 2021 1:53 PM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: 9/8 deadline for getting RTC for public comments to Deborah

Info from Betsy ---

So, Brittany, if you could clean up the easy parts – accept the big changes like cutting out tables etc. – do not think any tables are needed in RTC, then we will have fewer pages to work through on Tuesday. Greg can't make the Tues meeting since he will be having fun (!) but we can finish it up on Tues.

Or, if you want me to accept all changes re the table removal (old and new ones), I can do that. Just need your OK.

Sue

From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Thursday, September 2, 2021 1:29 PM
To: Euling, Susan <Euling.Susan@epa.gov>
Subject: RE: RTC for public comments

absolutely

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Thursday, September 2, 2021 12:47 PM
To: Behl, Betsy <Behl.Betsy@epa.gov>
Subject: RTC for public comments

Brittany, Greg, and I had two working meetings to go through the comments and make final revisions prior to Deborah's review. With Deborah out until Tuesday, we are planning to have one more meeting on 9/7 and finish it up. Brittany and Greg are really busy with PFOA/S right now.

If we can get the clean doc to Deborah by 9/8, is that OK?

Sue

Appointment

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 9/9/2021 7:34:55 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]

Subject: FW: GenX Assessment- Pre-meet
Location: Microsoft Teams Meeting

Start: 9/10/2021 6:00:00 PM
End: 9/10/2021 7:00:00 PM
Show Time As: Tentative

-----Original Appointment-----
From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Wednesday, September 8, 2021 1:15 PM
To: Behl, Betsy; Euling, Susan; Miller, GregoryG
Subject: GenX Assessment- Pre-meet
When: Friday, September 10, 2021 2:00 PM-3:00 PM (UTC-05:00) Eastern Time (US & Canada).
Where: Microsoft Teams Meeting

Microsoft Teams meeting

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P
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By participating in EPA hosted virtual meetings and events, you are consenting to abide by the agency's terms of use. In addition, you acknowledge that content you post may be collected and used in support of FOIA and eDiscovery activities.

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Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 9/10/2021 5:03:01 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: FW: GenX Chemicals

Done!

From: Gorzelnik, Stanley <Gorzelnik.Stanley@epa.gov>
Sent: Friday, September 10, 2021 12:49 PM
To: Euling, Susan <Euling.Susan@epa.gov>
Subject: RE: GenX Chemicals

Thank you, will do!

Respectfully,
Stanley Gorzelnik, PE

Office of Water SRMD Standards and Risk Reduction Branch
WJCE Building
1200 Pennsylvania AVE NW
Washington, DC 20004
Mailcode: 4607 M
Phone: (202)564-0492

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Friday, September 10, 2021 12:32 PM
To: Gorzelnik, Stanley <Gorzelnik.Stanley@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Cc: Albert, Ryan <Albert.Ryan@epa.gov>
Subject: RE: GenX Chemicals

Hi Stanley,

Betsy Behl reached out to Tala Henry at OPPT/OCSPP about your question since it is relevant to toxics.

Here is Tala's reply:

"They can address to **Tracy Williamson** and cc me please

Tala R. Henry, Ph.D.
Deputy Director
Office of Pollution Prevention & Toxics

T: 202-564-2959
E: henry.tala@epa.gov"

Thanks,
Sue

From: Gorzelnik, Stanley <Gorzelnik.Stanley@epa.gov>
Sent: Thursday, September 9, 2021 2:35 PM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>
Cc: Euling, Susan <Euling.Susan@epa.gov>
Subject: RE: GenX Chemicals

Thanks! The following document lists them as GenX chemicals and I was trying to figure out if they are by the definition presented in the HFPO document.

Cahoon, L. B. (2019). GenX Contamination of the Cape Fear River, North Carolina: Analytical Environmental Chemistry Uncovers Multiple System Failures. In Separation Science and Technology (Vol. 11, pp. 341-354). Academic Press. DOI: 10.1016/B978-0-12-815730-5.00013-2

I'm fairly confident the definition does not include all per- and polyfluoroether carboxylic acids but I'm not sure if these would be or not.

Respectfully,
Stanley Gorzelnik, PE

Office of Water SRMD Standards and Risk Reduction Branch
WJCE Building
1200 Pennsylvania AVE NW
Washington, DC 20004
Mailcode: 4607 M
Phone: (202)564-0492

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Thursday, September 9, 2021 2:24 PM
To: Gorzelnik, Stanley <Gorzelnik.Stanley@epa.gov>
Cc: Euling, Susan <Euling.Susan@epa.gov>
Subject: RE: GenX Chemicals

Hi Stanley,

I'm not sure about that. All I know is that HFPO dimer acid and the ammonium salt are the two major chemicals associated with the GenX technology. What is your source for these other chemicals being part of the GenX technology?

Thanks,
Britt

From: Gorzelnik, Stanley <Gorzelnik.Stanley@epa.gov>
Sent: Thursday, September 9, 2021 1:50 PM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>
Cc: Euling, Susan <Euling.Susan@epa.gov>
Subject: RE: GenX Chemicals

Thank you! Also, would these other chemicals be consistent with the definition of GenX that appears in the document:

"A processing aid technology that enables the creation of fluoropolymers without the use of PFOA"

Respectfully,
Stanley Gorzelnik, PE

Office of Water SRMD Standards and Risk Reduction Branch
WJCE Building
1200 Pennsylvania AVE NW
Washington, DC 20004
Mailcode: 4607 M
Phone: (202)564-0492

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Thursday, September 9, 2021 1:47 PM
To: Gorzelnik, Stanley <Gorzelnik.Stanley@epa.gov>
Cc: Euling, Susan <Euling.Susan@epa.gov>
Subject: RE: GenX Chemicals

Hi Stanley,

The only chemicals included in the GenX chemicals assessment are HFPO dimer acid and it's ammonium salt (CASRN 13252-13-6 and CASRN 62037-80-3). We only have tox info for those two.

Thanks,
Britt

From: Strong, Jamie <Strong.Jamie@epa.gov>
Sent: Thursday, September 9, 2021 1:41 PM
To: Gorzelnik, Stanley <Gorzelnik.Stanley@epa.gov>
Cc: Jacobs, Brittany <jacobs.brittany@epa.gov>; Euling, Susan <Euling.Susan@epa.gov>
Subject: RE: GenX Chemicals

Stanley,
I am not longer in the Office of Water. I have cc'ed Sue Euling and Brittany Jacobs in the OST here.

Thank you,
Jamie

Jamie B. Strong (she/her/hers)
Associate Director, Center for Public Health and Environmental Assessment (CPHEA)
Office of Research and Development (ORD)
U.S. Environmental Protection Agency (EPA)
1200 Pennsylvania Avenue, NW, Washington, DC 20460
RRB 71216
☎ Phone: (202) 566-0056 | strong.jamie@epa.gov

CPHEA's Mission: To provide the science needed to understand the complex interrelationship between people and nature in support of assessments and policy to protect human health and ecological integrity.

From: Gorzelnik, Stanley <Gorzelnik.Stanley@epa.gov>
Sent: Thursday, September 09, 2021 1:36 PM
To: Strong, Jamie <Strong.Jamie@epa.gov>
Subject: GenX Chemicals

Hello Jamie,

I am sorry to bother you. I am working on the upcoming drinking water regulations and was going through the GenX Chemicals toxicity assessments here: https://www.epa.gov/pfas/genx-toxicity-assessments-documents

I was wondering if things such as the following were included in GenX chemicals and if those are accounted for in the toxicity assessment or it was only really HFPO-DA and it's salt.

Abbreviation	CAS
Ex. 5 Deliberative Process (DP)	

Thank you for your time and consideration.

Respectfully,
Stanley Gorzelnik, PE

Office of Water SRMD Standards and Risk Reduction Branch
WJCE Building
1200 Pennsylvania AVE NW
Washington, DC 20004
Mailcode: 4607 M
Phone: (202)564-0492

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 9/10/2021 9:14:18 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]
Subject: Pls review: before pull trigger on meeting

Importance: High

Date and time: September 16th 3-4pm

Subject: GenX Chemicals Toxicity Assessment Briefing – Update on revisions and public release

Blurb:

Dear PFAS Regional Coordinators and Internal Agency Reviewers,

Please join us for a briefing on September 16th on the changes in the GenX Chemicals toxicity assessment in response to the 2nd peer review and steps to release of the final toxicity assessment.

Invites:
Same invites as last time plus Susan Burden (ORD PFAS lead). I would like to add Sharon Oxendine who is working on the RCRA Hazardous waste constituency listing of PFAS to include GenX. Are you OK with that?

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 9/10/2021 9:21:50 PM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: RE: Pls review: before pull trigger on meeting

OK got it.

Sue

From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Friday, September 10, 2021 5:20 PM
To: Euling, Susan <Euling.Susan@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: RE: Pls review: before pull trigger on meeting

Id rather keep it to the science and not get into the process for release. If asked we say we are devoting the next few weeks to outreach.

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Friday, September 10, 2021 5:14 PM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>; Behl, Betsy <Behl.Betsy@epa.gov>
Subject: Pls review: before pull trigger on meeting
Importance: High

Ex. 5 Deliberative Process (DP)

Blurb:

Dear PFAS Regional Coordinators and Internal Agency Reviewers,

Please join us for a briefing on September 16th on the final toxicity assessment for GenX Chemicals, highlighting changes in response to the 2nd peer review

Invites:
Same invites as last time plus Susan Burden (ORD PFAS lead). I would like to add Sharon Oxendine who is working on the RCRA Hazardous waste constituency listing of PFAS to include GenX. Are you OK with that? YES

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 9/13/2021 3:02:31 AM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: RE: TT lite tech edit of Draft GenX document

p.s. I recalled the message to Shamima until we have the correct draft to attach and final list of items for the tech edit.

Here is the revised list that I will send to her once I have the doc. Please let me know if you have any additions/deletions.

Here is the technical direction:

- 2 day turnaround time – We would like to have this completed by noon on 9/15/21 in order to send it to ATSDR on the 15th.
- The doc is (105 pages main body; 19 pages of references, 5 figures, and 24 tables)

Please address the following items (note this is not the final edit of this draft) in the attached draft:

- Formatting:
  - one font
  - fix call outs and number of tables, figures, and appendices and subsequently, fix the TOC
  - *NOTE: Appendix D (the NTP pathology report) only needs editing for formatting. This is a final report so no changes to text should be made.*
- Reference check (are all citations referenced?)
- Address the comment bubbles in the document.

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Sunday, September 12, 2021 9:45 PM
To: Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: TT lite tech edit of Draft GenX document
Importance: High

Hi Sue,

The header in Appendix D is for the assessment, not the NTP PWG Pathology Peer Review report. The title page of the NTP report says it's the final report. The headers for the entire document need to be changed to "Final" or whatever we want to put for this outreach time. That is something I would want Tetra Tech to do as part of the lite tech edit. The NTP considers this a final report.

I personally like having the NTP report as an appendix (perhaps I am just proud we were able to get that done) but won't fight to keep it in. It does have it's own HERO ID.

Please use the version I have attached to this email for the tech edit. I have made a few editorial changes and flagged a few additional things for tech edit since it went to Deborah.

The main thing I would want done by Tetra Tech is to address the comment bubbles in the attached version. It's mostly adding references and formating figures/tables.

Thanks for handling this!

Britt

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Sunday, September 12, 2021 4:55 PM
To: Miller, GregoryG <Miller.Gregory@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: FW: TT lite tech edit of Draft GenX document
Importance: High

Hi Greg and Brittany,

For the light tech edit, I suggest not having TT spend time on Appendix D: NTP PWG Pathology Peer Review of Liver Findings – we may remove this from the document. This is the final report from NTP, right that has its own publicly available HERO ref? I understand that for the peer reviewers you would want them to be able to look at the NTP report. But for the final report, it seems like overkill.

I also noticed that the header says "Public Comment draft" for the NTP report. Isn't it final? If so, we need to fix that. How is NTP handling the document? Do they see it as final report or a forever draft report?

I'm trying to cut down on time and money.

Could you please let me know ASAP so I can let Shamima know..

Thanks,
Sue

From: Euling, Susan
Sent: Sunday, September 12, 2021 4:50 PM
To: Akhter, Shamima <Akhter.Shamima@epa.gov>
Cc: Jacobs, Brittany <Jacobs.Brittany@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: TT lite tech edit of Draft GenX document
Importance: High

Hi Shamima,

Attached is the draft document for the GenX toxicity assessment for a fast turnaround "lite" tech edit to allow reviewers to review a cleaned up version. This will not be the final tech edit for this document.

Here is the technical direction:

- 2 day turnaround time – We would like to have this completed by noon on 9/15/21 in order to send it to ATSDR on the 15th.
- The doc is (105 pages main body; 19 pages of references, 5 figures, and 24 tables
- Do not do tech edit for Appendix D: NTP PWG Pathology Peer Review of Liver Findings – we may remove this from the document. We will let you know.

Please address the following items (note this is not the final edit of this draft) in the attached draft:

- Formatting:
    - one font

    - fix call outs and number of tables, figures, and appendices and then fix TOC
- Grammar/verb tense
- Reference check (are all citations referenced?)
- Address the comment bubbles in the document.
- Make sure "DRAFT: DO NOT CITE, QUOTE, OR DISTRIBUTE" is on each page.

If there are any questions about the task, please ask Brittany and Greg for clarification.

Thank you.

Sue

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 9/13/2021 2:58:09 AM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: RE: TT lite tech edit of Draft GenX document

Hi Brittany,

OK I can understand wanting to include the report in the appendices.

A couple of issues to resolve before this goes to TT –

1) the file that you sent me was blank.
2) Appendix D in TOC is not listed as the full report. It is listed as - Appendix D: NTP PWG Pathology Peer Review of Liver Findings D-1
   Please revise to be say Final Report – something like Appendix D: NTP Final Report of the Pathology Working Group (PWG) Peer Review of Liver Findings – does that match what is in HERO? could you add a date?

I don't think the GenX report should say Final until we get through with the outreach. So let's leave the headers as Draft for now. Could you add the HERO link to this reference?: NTP (National Toxicology Program). 2019. *Pathology Peer Review of Liver Findings for H-28548: Subchronic Toxicity 90 Day Gavage Study in Mice (DuPont-18405-1307)*. Study Number WIL-189225. National Institute of Environmental Health Sciences, National Toxicology Program Pathology Working Group, Research Triangle Park, NC.

You could add it as a comment in the draft doc (p. 118).

Please send me the updated draft so I can send to TT.

OK thanks!
Sue

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Sunday, September 12, 2021 9:45 PM
To: Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: TT lite tech edit of Draft GenX document
Importance: High

Hi Sue,

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I personally like having the NTP report as an appendix (perhaps I am just proud we were able to get that done) but won't fight to keep it in. It does have it's own HERO ID.

Please use the version I have attached to this email for the tech edit. I have made a few editorial changes and flagged a few additional things for tech edit since it went to Deborah.

The main thing I would want done by Tetra Tech is to address the comment bubbles in the attached version. It's mostly adding references and formating figures/tables.

Thanks for handling this!

Britt

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Sunday, September 12, 2021 4:55 PM
To: Miller, GregoryG <Miller.Gregory@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: FW: TT lite tech edit of Draft GenX document
Importance: High

Hi Greg and Brittany,

For the light tech edit, I suggest not having TT spend time on Appendix D: NTP PWG Pathology Peer Review of Liver Findings – we may remove this from the document. This is the final report from NTP, right that has its own publicly available HERO ref? I understand that for the peer reviewers you would want them to be able to look at the NTP report. But for the final report, it seems like overkill.

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I'm trying to cut down on time and money.

Could you please let me know ASAP so I can let Shamima know..

Thanks,
Sue

From: Euling, Susan
Sent: Sunday, September 12, 2021 4:50 PM
To: Akhter, Shamima <Akhter.Shamima@epa.gov>
Cc: Jacobs, Brittany <Jacobs.Brittany@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: TT lite tech edit of Draft GenX document
Importance: High

Hi Shamima,

Attached is the draft document for the GenX toxicity assessment for a fast turnaround "lite" tech edit to allow reviewers to review a cleaned up version. This will not be the final tech edit for this document.

Here is the technical direction:

- 2 day turnaround time – We would like to have this completed by noon on 9/15/21 in order to send it to ATSDR on the 15th.
- The doc is (105 pages main body; 19 pages of references, 5 figures, and 24 tables
- Do not do tech edit for Appendix D: NTP PWG Pathology Peer Review of Liver Findings – we may remove this from the document. We will let you know.

Please address the following items (note this is not the final edit of this draft) in the attached draft:

- Formatting:

    - one font
    - fix call outs and number of tables, figures, and appendices and then fix TOC
- Grammar/verb tense
- Reference check (are all citations referenced?)
- Address the comment bubbles in the document.
- Make sure "DRAFT: DO NOT CITE, QUOTE, OR DISTRIBUTE" is on each page.

If there are any questions about the task, please ask Brittany and Greg for clarification.

Thank you.

Sue

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 9/13/2021 5:26:17 AM
To: Miller, GregoryG [Miller.Gregory@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: Pls reply Mon morning: GenX slides for Sept. 16th briefing

Importance: High

I've been working on the slides (revising the ones from the March agency briefing) and have some questions –

- 2021 Peer review dates? Initiated in March? Received peer review report in late April/early May?
- Number of peer reviewers – 7? Do you want to include that some were same as 1st round peer reviewers??
- 1st peer review dates??
- Peer review comments – see if you agree with these points
  - Generally favorable
    - Supportive of NTP PWG review
    - Majority supported 10X UFS and 10X UFDB
    - *(add other points?)*
  - 3 major issues
    - Ex. 5 Deliberative Process (DP)

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 9/13/2021 1:55:51 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Akhter, Shamima [Akhter.Shamima@epa.gov]
CC: Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: RE: TT lite tech edit of Draft GenX document

Hi Shamima,

Could you let me know whether the doc made it through email?

Thanks,
Sue

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Monday, September 13, 2021 9:53 AM
To: Euling, Susan <Euling.Susan@epa.gov>; Akhter, Shamima <Akhter.Shamima@epa.gov>
Cc: Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: TT lite tech edit of Draft GenX document

Hi Sue,

In the past we've had to upload documents to Sue Lanberg's onedrive folder because the files bounce back (I forgot this happened before). Here is the folder:

Ex. 6 Personal Privacy (PP)

I can upload the GenX doc there if it isn't able to be sent through email or there are access issues, just let me know.

Britt

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Monday, September 13, 2021 9:22 AM
To: Akhter, Shamima <Akhter.Shamima@epa.gov>
Cc: Jacobs, Brittany <jacobs.brittany@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: TT lite tech edit of Draft GenX document

give me a few minutes and I will send you the correct document.

From: Akhter, Shamima <Akhter.Shamima@epa.gov>
Sent: Monday, September 13, 2021 9:10 AM
To: Euling, Susan <Euling.Susan@epa.gov>
Cc: Jacobs, Brittany <jacobs.brittany@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: TT lite tech edit of Draft GenX document

Hi Brittany and Greg,

The email got bounced back due to the large file. Tried couple of times. Do you have one Drive set up for TT to access this file?

Thanks,
Shamima

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Sunday, September 12, 2021 4:50 PM
To: Akhter, Shamima <Akhter.Shamima@epa.gov>
Cc: Jacobs, Brittany <jacobs.brittany@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: TT lite tech edit of Draft GenX document
Importance: High

Hi Shamima,

Attached is the draft document for the GenX toxicity assessment for a fast turnaround "lite" tech edit to allow reviewers to review a cleaned up version. This will not be the final tech edit for this document.

Here is the technical direction:

- 2 day turnaround time – We would like to have this completed by noon on 9/15/21 in order to send it to ATSDR on the 15th.
- The doc is (105 pages main body; 19 pages of references, 5 figures, and 24 tables
- Do not do tech edit for Appendix D: NTP PWG Pathology Peer Review of Liver Findings – we may remove this from the document. We will let you know.

Please address the following items (note this is not the final edit of this draft) in the attached draft:

- Formatting:
  - one font
  - fix call outs and number of tables, figures, and appendices and then fix TOC
- Grammar/verb tense
- Reference check (are all citations referenced?)
- Address the comment bubbles in the document.
- Make sure "DRAFT: DO NOT CITE, QUOTE, OR DISTRIBUTE" is on each page.

If there are any questions about the task, please ask Brittany and Greg for clarification.

Thank you.

Sue

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 9/13/2021 2:07:07 PM
To: Miller, GregoryG [Miller.Gregory@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: FW: Pls send to TT: GenX light tech edit

Shamima got the word doc – she does not need the doc loaded into the SP site.

From: Akhter, Shamima <Akhter.Shamima@epa.gov>
Sent: Monday, September 13, 2021 10:06 AM
To: Euling, Susan <Euling.Susan@epa.gov>
Subject: RE: Pls send to TT: GenX light tech edit

Yes. I received the attachment.

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Monday, September 13, 2021 10:05 AM
To: Akhter, Shamima <Akhter.Shamima@epa.gov>
Subject: RE: Pls send to TT: GenX light tech edit

But did you get the GenX word doc via email?

From: Akhter, Shamima <Akhter.Shamima@epa.gov>
Sent: Monday, September 13, 2021 10:04 AM
To: Euling, Susan <Euling.Susan@epa.gov>
Cc: Miller, GregoryG <Miller.Gregory@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: RE: Pls send to TT: GenX light tech edit

I'll confirm you once I hear from TT.

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Monday, September 13, 2021 9:51 AM
To: Akhter, Shamima <Akhter.Shamima@epa.gov>
Cc: Miller, GregoryG <Miller.Gregory@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: Pls send to TT: GenX light tech edit
Importance: High

Hi Shamima,

Sorry for the confusion. I had pulled back the email that I had sent last night but apparently it still went to you.

See below for the technical direction.

Thanks,
Sue

TT Technical direction:

- 2 day turnaround time – We would like to have this completed by noon on 9/15/21 in order to send it to ATSDR on the 15th.

- The doc is (105 pages main body; 19 pages of references, 5 figures, and 24 tables)

Please address the following items (Note: this is not the final tech edit) as a "Lite" tech edit in the attached draft:

- Formatting:
  - one font
  - fix call outs and number of tables, figures, and appendices and subsequently, fix the TOC
  - *NOTE: Appendix D (the NTP pathology report) only needs editing for formatting. This is a final report so no changes to text should be made.*
  - Ensure all headers say "DRAFT– DO NOT CITE OR QUOTE" and that the date in the header is September 2021
  - Ensure page numbering is accurate
  - Check the document for reference to "PFAS Action Plan" and add comment bubbles to flag those places.
- Reference check (are all citations referenced?)
- Address the comment bubbles in the document.
- Contact EPA if you have any questions.

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 9/13/2021 2:11:16 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: FW: FW: Pls send to TT: GenX light tech edit

Importance: High

Oh brother – it looks like the file got to Shamima but not to TT. Could you load it into the SP site?

Thanks!

Sue

From: Akhter, Shamima <Akhter.Shamima@epa.gov>
Sent: Monday, September 13, 2021 10:10 AM
To: Euling, Susan <Euling.Susan@epa.gov>
Cc: Jacobs, Brittany <jacobs.brittany@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: FW: FW: Pls send to TT: GenX light tech edit
Importance: High

The file didn't go through. Please upload the file onto OneDrive and provide the link. I'll send the TDs by email to TT.

From: postmaster@tetratechinc.onmicrosoft.com <postmaster@tetratechinc.onmicrosoft.com>
Sent: Monday, September 13, 2021 10:05 AM
To: Akhter, Shamima
Subject: Undeliverable: FW: Pls send to TT: GenX light tech edit

Delivery has failed to these recipients or groups:

Susan Lanberg
Your message is too large to send. To send it, make the message smaller, for example, by removing attachments.

John Hochheimer
Your message is too large to send. To send it, make the message smaller, for example, by removing attachments.

Diagnostic information for administrators:

Generating server: DM6PR07MB4170.namprd07.prod.outlook.com

Susan.Lanberg@tetratech.com
Remote Server returned '554 5.2.3 < #5.2.3 smtp;550 5.2.3 RESOLVER.RST.RecipSizeLimit; message too large for this recipient>'

john.hochheimer@tetratech.com
Remote Server returned '554 5.2.3 < #5.2.3 smtp;550 5.2.3 RESOLVER.RST.RecipSizeLimit; message too large for this recipient>'

Original message headers:


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To: Susan Lanberg <susan.lanberg@tetratech.com>
CC: John Hochheimer <john.hochheimer@tetratech.com>
Subject: FW: Pls send to TT: GenX light tech edit
Thread-Topic: Pls send to TT: GenX light tech edit
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=?us-ascii?Q?237:2,238:2,239:54,240:3,241:2,242:2,243:48,244:3,245:2,246:?=
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=?us-ascii?Q?net.oecd.org?=
X-MS-Exchange-Organization-Persisted-Urls-28:
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=?us-ascii?Q?,214:3,215:53,216:3,217:55,218:3,219:48,220:3,221:43,222:2,2?=
=?us-ascii?Q?23:43,224:2,225:43,226:2,227:41,228:2,229:48,230:3,231:32,23?=
=?us-ascii?Q?2:1,233:41,234:2,235:48,236:3,237:2,238:2,239:54,240:3,241:2?=
=?us-ascii?Q?,242:2,243:48,244:3,245:31,246:1,247:32,248:1,249:32,250:1,2?=
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=?us-ascii?Q?3,245:2,246:2,247:2,248:2,249:16,250:1,251:20,252:1,1023:38,?=
=?us-ascii?Q?1024:0,1025:32,1026:0}","DPD":{"UF":"256","OCH":"11162320799?=
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=?us-ascii?Q?"NU":"www.osha.gov/chemicaldata","UFT":"{101:26,102:2,105:12?=
=?us-ascii?Q?,108:3,110:4,111:8,112:2,114:4,115:3,116:1,118:3,119:4,121:4?=
X-MS-Exchange-Organization-Persisted-Urls-29:
=?us-ascii?Q?,122:3,123:1,125:3,128:13,131:16824,135:\"F538357B,D6562B1F,?=
=?us-ascii?Q?47188893,3657B7F3,1D184897,61993020,2C94D0FA,A8D99E66,6346B5?=
=?us-ascii?Q?A9,32686DA2,6B6EB352,D8F8DE4C,3FA4AC41\",142:0,205:42,206:2,?=
=?us-ascii?Q?207:46,208:3,209:43,210:3,211:40,212:2,213:49,214:3,215:53,2?=
=?us-ascii?Q?16:3,217:55,218:3,219:48,220:3,221:43,222:2,223:43,224:2,225?=
=?us-ascii?Q?:43,226:2,227:41,228:2,229:48,230:3,231:52,232:3,233:45,234:?=
=?us-ascii?Q?3,235:48,236:3,237:2,238:2,239:54,240:3,241:2,242:2,243:48,2?=
=?us-ascii?Q?44:3,245:2,246:2,247:2,248:2,249:24,250:1,251:23,252:1,1023:?=
=?us-ascii?Q?2,1024:0,1025:0,1026:0}","DPD":{"UF":"256","OCH":"3222333966?=
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=?us-ascii?Q?lse,"LI":null,"SRCI":2,"IU":null,"NU":"pubchem.ncbi.nlm.nih.?=
=?us-ascii?Q?gov/search/index.html","UFT":"{101:42,102:5,105:24,108:5,110?=
=?us-ascii?Q?:3,111:7,112:2,114:3,115:16,116:3,118:7,119:3,121:3,122:3,12?=
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=?us-ascii?Q?65D,852494BA,CDF6ED16,2EEF52B3,5516D1A0,5C0E5A35,3CF7F8DE,40?=
=?us-ascii?Q?91306,84B5E94D,1D956C31,7DCB254C,C7F412B0,A7C5E170,E5037E8C,?=
=?us-ascii?Q?21419CEA,9E44B498\",142:0,205:42,206:2,207:46,208:3,209:43,2?=
=?us-ascii?Q?10:3,211:40,212:2,213:49,214:3,215:53,216:3,217:55,218:3,219?=
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=?us-ascii?Q?110:11,111:15,112:2,114:11,115:3,116:1,118:3,119:11,121:11,1?=
=?us-ascii?Q?22:3,123:1,125:3,131:79665,135:\"F538357B,EA1BAFC7,1F6F0A46,?=
X-MS-Exchange-Organization-Persisted-Urls-30:
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=?us-ascii?Q?2F\",142:0,205:42,206:2,207:46,208:3,209:43,210:3,211:40,212?=
=?us-ascii?Q?:2,213:49,214:3,215:53,216:3,217:55,218:3,219:48,220:3,221:4?=
=?us-ascii?Q?3,222:2,223:43,224:2,225:43,226:2,227:41,228:2,229:48,230:3,?=
=?us-ascii?Q?231:52,232:3,233:45,234:3,235:48,236:3,237:2,238:2,239:54,24?=
=?us-ascii?Q?0:3,241:2,242:2,243:48,244:3,245:2,246:2,247:2,248:2,249:22,?=
=?us-ascii?Q?250:1,251:23,252:1,1023:3,1024:0,1025:0,1026:0}","DPD":{"UF"?=
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=?us-ascii?Q?9:43,210:3,211:40,212:2,213:49,214:3,215:53,216:3,217:55,218?=
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=?us-ascii?Q?237:2,238:2,239:54,240:3,241:2,242:2,243:48,244:3,245:2,246:?=
=?us-ascii?Q?2,247:2,248:2,249:16,250:1,251:20,252:1,1023:38,1024:0,1025:?=
=?us-ascii?Q?32,1026:0}","DPD":{"UF":"256","OCH":"1432573418734300101 8","?=

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X-MS-Exchange-Organization-Persisted-Urls-31:
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=?us-ascii?Q?t=5Fid/2627","IAR":false,"LI":null,"SRCI":2,"IU":null,"NU":"?=
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=?us-ascii?Q?8:4,131:11295,135:\"C8F6E537,54140450,238F643D,22185076,6787?=
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=?us-ascii?Q?4,FAFA1C83,597B5654\",142:1,205:42,206:2,207:46,208:3,209:43?=
=?us-ascii?Q?,210:3,211:40,212:2,213:49,214:3,215:53,216:3,217:55,218:3,2?=
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=?us-ascii?Q?2,238:2,239:54,240:3,241:2,242:2,243:48,244:3,245:2,246:2,24?=
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=?us-ascii?Q?v/summary/visual/assessment/100500273/GenX-SQE-Heatmap/","IA?=
=?us-ascii?Q?R":false,"LI":null,"SRCI":2,"IU":null,"NU":"hawcprd.epa.gov/?=
=?us-ascii?Q?summary/visual/assessment/100500273/GenX-SQE-Heatmap","UFT":?=
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X-MS-Exchange-Organization-Persisted-Urls-32:
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=?us-ascii?Q?ha.europa.eu/nl/registration-dossier/-/registered-dossier/26?=
=?us-ascii?Q?79/7/11/6/=3FdocumentUUID=3D0ee876ba-9ead-4569-8f9d-09c43212?=
=?us-ascii?Q?acf0","IAR":false,"LI":null,"SRCI":2,"IU":null,"NU":"echa.eu?=
=?us-ascii?Q?ropa.eu/nl/registration-dossier/-/registered-dossier/2679/7/?=
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X-MS-Exchange-Organization-Persisted-Urls-33:
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X-MS-Exchange-Organization-Persisted-Urls-34:
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X-MS-Exchange-Organization-Persisted-Urls-35:
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=?us-ascii?Q?6A4F8,7B910A49,A7B4984F,E90384D8,958228AD,9B282DCB,3861BB4F,?=
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X-MS-Exchange-Organization-Persisted-Urls-36:
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=?us-ascii?Q?.getfile=3Fp=5Fdownload=5Fid=3D459047","IAR":false,"LI":null?=
=?us-ascii?Q?,"SRCI":2,"IU":null,"NU":"ofmpub.epa.gov/eims/eimsconm.getfi?=
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X-MS-Exchange-Organization-Persisted-Urls-37:
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=?us-ascii?Q?31:11295,135:\"C434EC9C,AB804C0F,E3818AD8,DFFC43BF,238F643D,?=
=?us-ascii?Q?85A26328,CEFC6C7A,CA3A924,2E185FAE,5E55B854,46F4BEEE,97175DA?=
=?us-ascii?Q?9,8E821DA8,A3398384,FBB6BC9E,DCFA43ED\",142:1,205:42,206:2,2?=
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X-MS-Exchange-Organization-Persisted-Urls-38:
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X-MS-Exchange-Organization-Persisted-Urls-46:
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X-MS-Exchange-Organization-Persisted-Urls-47:
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X-MS-Exchange-Organization-Persisted-Urls-49:
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X-MS-Exchange-Organization-Persisted-Urls-51:
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X-MS-Exchange-Organization-Persisted-Urls-52:
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X-MS-Exchange-Organization-Persisted-Urls-54:
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X-MS-Exchange-Organization-AVScannedByV2: true
X-MS-Exchange-Organization-AVScanComplete: true
X-MS-Exchange-Organization-IsAnyAttachmentAtpSupported: true
X-MS-Exchange-Organization-UrlSelected: 1
X-MS-Exchange-Organization-UrlLogged: 1
X-MS-Exchange-Organization-Cross-Session-Cache:
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X-MS-Exchange-Organization-TotalRecipientCount: 2

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 9/14/2021 1:13:01 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: RE: GenX slides

For the other presentations, it probably makes sense to describe the purpose as public and peer review comments only – Yes/No? And, having one laundry list of issues combining the substantive issues from public and peer review comments and pick them off one at a time. Yes/No?

1) pathology classification
2) SR
3) UFD – even though not an issue for peer reviewers, now is back in the list due to public and agency review
4) UFS
5) interpretation of adversity call
6) new studies

For the presentations to the states and regions, please let me know whether this revision works and I'll make a 2nd slide set.

Sue

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Tuesday, September 14, 2021 8:54 AM
To: Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: GenX slides

This works for the Agency but not for any other presentation we have to do. I think keep as is and I can just briefly summarize the issues that originated from the public comment if Greg already spoke to the Agency reviewers about them. I will have to go into detail about it for all of the other presentations.

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Tuesday, September 14, 2021 8:49 AM
To: Miller, GregoryG <Miller.Gregory@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: RE: GenX slides

A compatible change to slide 2 to set the stage that the presentation is to describe what has happened since March 2021 briefing which was kicking of Agency Review:

Share EPA's Response to the Agency and 2nd Peer Review ~~and Public~~ Comments to Produce the Final GenX Toxicity Assessment

Let me know whether you are OK with these (above and below) changes.

Sue

From: Euling, Susan
Sent: Tuesday, September 14, 2021 8:44 AM
To: Miller, GregoryG <Miller.Gregory@epa.gov>; Jacobs, Brittany <Jacobs.Brittany@epa.gov>
Subject: RE: GenX slides

Thanks Greg!

Brittany and Greg,

I have one issue – now that the SR issue was moved before the slide on peer review, then issue #2 (slide 10) should be removed? The way I ordered the slides was to put SR issue as a peer review issue, noting that there were also public and agency review comments on this – because we have now addressed it (post agency and peer review comments). This is different from the NTP PWG issue and resolution which was "history" (they have heard this in the March agency briefing).

My suggestion is to change slide 10 to say issues raised in Agency and/or Peer review comments and then move slide 9 two slides forward and keep it as issue #2.

Sue

From: Miller, GregoryG <Miller.Gregory@epa.gov>
Sent: Tuesday, September 14, 2021 8:26 AM
To: Euling, Susan <Euling.Susan@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: RE: GenX slides

A few minor clarifications.

Greg Miller, Senior Environmental Health Scientist
Human Health Risk Assessment Branch
Office of Science and Technology, Health and Ecological Criteria Division
US Environmental Protection Agency, Office of Water
1200 Pennsylvania Ave, NW (MC 4304T)
Washington, DC 20460

phone: (202) 566-2310
miller.gregory@epa.gov

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Tuesday, September 14, 2021 8:17 AM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: GenX slides

Greg,

Will you be commenting as well or are you good?

Thanks,
Sue

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Tuesday, September 14, 2021 3:27 AM
To: Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: GenX slides

Hi Sue,

Thanks so much for getting these together. My comments and edits attached. I tried to track most of my changes in comment bubbles. I don't think we should include a slide comparing the RfD to other PFAS, but I think it would be helpful to have a slide that compares the RfDs from the draft to the RfDs in the final.

Let me know if you have any questions about my comments/edits.

Britt

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Monday, September 13, 2021 10:45 PM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: GenX slides
Importance: High

Hi Brittany and Greg,

Attached are draft slides. I framed these slides on the steps since the Agency reviewers have last seen the document – so from the 2nd peer review. I did retain some history about the NTP PWG because that is so significant.

The basic intro slides are included for the briefings to states and regions. Brittany, Betsy, and I discussed last Friday is making one set of slides that can be recycled for the briefings to states and regions. Alternatively, you can choose to leave this out for the Agency reviewer briefing.

I have questions for you in yellow highlight on Slides 9 and 13. I also wondered whether it would be worth adding a slide comparing the RfD to other PFAS – but opted not to include it to keep it focused on GenX. If you do want the comparison, I updated the comparison table in the Technical Fact Sheet (on SP).

We will need Betsy's review of the slides. If you could review and revise by noon or 1pm tomorrow then I could move them on to Betsy for her review.

Thanks,
Sue

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 9/14/2021 2:45:12 AM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: GenX slides
Attachments: GenX Chems Slides for Agency Review_Sept 2021.pptx

Importance: High

Hi Brittany and Greg,

Attached are draft slides. I framed these slides on the steps since the Agency reviewers have last seen the document – so from the 2nd peer review. I did retain some history about the NTP PWG because that is so significant.

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Thanks,
Sue

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 9/14/2021 2:08:09 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: Pls review by 9/17: external audience GenX slides
Attachments: GenX Chems Slides for External Presentations_Sept 2021 sye_blj gMiller.pptx

Please review by the end of the week.

Thanks,
Sue

Appointment

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 9/14/2021 7:26:33 PM
To: gaz5@cdc.org; Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; hga0@cdc.org; Donohue, Joyce [Donohue.Joyce@epa.gov]; Soares, Barbara [soares.barbara@epa.gov]

Subject: ATSDR-EPA discussion of EPA's Toxicity Assessment for GenX chemicals
Location: Microsoft Teams Meeting

Start: 9/23/2021 1:00:00 PM
End: 9/23/2021 2:00:00 PM
Show Time As: Tentative

Required Attendees: gaz5@cdc.org; Jacobs, Brittany; Miller, GregoryG; Behl, Betsy; hga0@cdc.org; Donohue, Joyce; Soares, Barbara

This meeting will be an opportunity for ATSDR to provide verbal comments on the pre-publication version of EPA's final toxicity assessment for GenX chemicals.

The document will be sent via email tomorrow (9/15).

Please forward this invite to your key staff. We look forward to your valuable input.

Thanks,

Susan Euling, Ph.D.
Human Health Risk Assessment Branch/HECD
Office of Science and Technology, Office of Water
U.S. Environmental Protection Agency
(o) 202-566-2717
Ex. 6 Personal Privacy (PP)

Microsoft Teams meeting

Join on your computer or mobile app
Click here to join the meeting

Or call in (audio only)
Ex. 6 Personal Privacy (PP) States, Washington DC
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By participating in EPA hosted virtual meetings and events, you are consenting to abide by the agency's terms of use. In addition, you acknowledge that content you post may be collected and used in support of FOIA and eDiscovery activities.

Learn More | Meeting options

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 9/14/2021 6:47:38 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: versions of GenX Sept briefing slides
Attachments: GenX Chems Slides for External Presentations_Sept 2021 sye_blj gMiller v2 no notes.pptx; GenX Chems Slides for Agency Reviewers_Sept 2021 sye_blj gMiller v2 no notes version.pptx; GenX Chems Slides for Agency Reviewers_Sept 2021 sye_blj gMiller v2 with notes version.pptx

Hi Brittany and Greg,

I have attached two Agency reviewer versions (with and without notes pages) and one External version - more streamlined that doesn't make a big distinction between the issues raised in public comment, agency review, peer review – that includes the same updated slides from the revisions that Betsy requested.

I'll let you decide how you want to proceed with any changes to the slides for the outreach briefings (Sept. 23 and 24th). My slide services have ended because I must now turn to other issues!

Sue

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 9/14/2021 2:49:43 PM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: please get back to me -- ATSDR GenX meeting 9/22

Importance: High

9/22 possible options:
9am if BB does not need to be at Aquatic Life Criteria and Toxics Outreach Workshop to Regions
11:30am-12:30pm may work – look at your meetings then – doesn't look important to me
12-1pm maybe – again, check your meetings
1pm if Betsy can cancel HECD biweekly (unlikely)
2pm if cancel SRMD/HECD check in

9/23 possible options:
9am
11am

Sue

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 9/14/2021 8:34:44 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: RE: GenX slides

No problem – I love making slides!

But my time is up!

Sue

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Tuesday, September 14, 2021 2:53 PM
To: Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: GenX slides

Right, I can do that. Made the comment when I thought we were still making one slide deck. Thanks again

---

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Tuesday, September 14, 2021 2:52 PM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: GenX slides

I am now seeing this additional comment that I overlooked. Since the agency reviewers saw the document, the RfDs have not changed so I would not suggest putting that in a table – you can verbally note it.

If you want to include a comparison table for the External briefings, then that is easy for you to do.

Sue

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Tuesday, September 14, 2021 3:27 AM
To: Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: GenX slides

Hi Sue,

Thanks so much for getting these together. My comments and edits attached. I tried to track most of my changes in comment bubbles. I don't think we should include a slide comparing the RfD to other PFAS, but I think it would be helpful to have a slide that compares the RfDs from the draft to the RfDs in the final.

Let me know if you have any questions about my comments/edits.

Britt

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Monday, September 13, 2021 10:45 PM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>

Subject: GenX slides
Importance: High

Hi Brittany and Greg,

Attached are draft slides. I framed these slides on the steps since the Agency reviewers have last seen the document – so from the 2nd peer review. I did retain some history about the NTP PWG because that is so significant.

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Thanks,
Sue

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 9/15/2021 4:25:59 PM
To: Akhter, Shamima [Akhter.Shamima@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: RE: GenX Lite Tech Edit Files

Thank you Shamima!

Sue

From: Akhter, Shamima <Akhter.Shamima@epa.gov>
Sent: Wednesday, September 15, 2021 12:00 PM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Cc: Euling, Susan <Euling.Susan@epa.gov>
Subject: FW: GenX Lite Tech Edit Files

Please see the email below from TT that they have uploaded files to the Teams site that Sue has created. Thanks.

From: Lanberg, Susan <Susan.Lanberg@tetratech.com>
Sent: Wednesday, September 15, 2021 11:57 AM
To: Akhter, Shamima <Akhter.Shamima@epa.gov>
Cc: Carlson, Krista <krista.carlson@tetratech.com>; rachel.buzzeo@tetratech.com; Cano, Amanda <AMANDA.CANO@tetratech.com>; John Hochheimer <john.hochheimer@tetratech.com>
Subject: GenX Lite Tech Edit Files

Hi Shamima,

I wanted to let you know that I just uploaded the clean and tracked changes versions of the GenX Chemicals Toxicity Assessment files to the Teams site that EPA set up. We just left two comments in the references section of the clean version as placeholders per EPA's request.

- 091321 DRAFT near final GenX Chemicals Toxicity Assessment_9.12_For TT Tech Edit_Clean.docx
- 091321 DRAFT near final GenX Chemicals Toxicity Assessment_9.12_For TT Tech Edit_TRCH.docx

Please let us know if you have any questions.

Thank you,

Sue

Susan Adair Lanberg | Senior Environmental Scientist, WTR QA Officer
Direct: (703) 385-1906, (703) 385-6000 ext.1906 | Fax: (703)385-6007
susan.lanberg@tetratech.com

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Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 9/15/2021 6:15:54 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: RE: Before 4pm today: GenX Lite Tech Edit Files

Thanks!

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Wednesday, September 15, 2021 2:09 PM
To: Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: Before 4pm today: GenX Lite Tech Edit Files

Agreed, I just deleted out the two comment bubbles (they were reminders for me) so the near clean version is now clean.

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Wednesday, September 15, 2021 2:06 PM
To: Miller, GregoryG <Miller.Gregory@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: RE: Before 4pm today: GenX Lite Tech Edit Files

OK great thanks.

From: Miller, GregoryG <Miller.Gregory@epa.gov>
Sent: Wednesday, September 15, 2021 2:05 PM
To: Euling, Susan <Euling.Susan@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: RE: Before 4pm today: GenX Lite Tech Edit Files

I took a quick look. There are only 2 comment bubbles dealing with putting references into the main body of the document. I think it's fine to delete them before we share with ATSDR. I didn't do an in depth read, but I didn't see any glaring problems as I scrolled through.

Greg Miller, Senior Environmental Health Scientist
Human Health Risk Assessment Branch
Office of Science and Technology, Health and Ecological Criteria Division
US Environmental Protection Agency, Office of Water
1200 Pennsylvania Ave, NW (MC 4304T)
Washington, DC 20460

phone: (202) 566-2310
miller.gregory@epa.gov

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Wednesday, September 15, 2021 12:30 PM
To: Miller, GregoryG <Miller.Gregory@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: Before 4pm today: GenX Lite Tech Edit Files
Importance: High

Hi Brittany and Greg,

I'd like to take the clean version and send to ATSDR for their review. *I'll remove any comment bubbles before I send it to them.*

I think it would be best if one of you did a very quick scroll through (not a full read through) to see if there are any issues. Here is the link: TT edit GenX clean

Could one of you do that before 4pm? If not possible, then I can remove the comment bubbles and press send.

Thank you!

Sue

From: Akhter, Shamima <Akhter.Shamima@epa.gov>
Sent: Wednesday, September 15, 2021 12:00 PM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Cc: Euling, Susan <Euling.Susan@epa.gov>
Subject: FW: GenX Lite Tech Edit Files

Please see the email below from TT that they have uploaded files to the Teams site that Sue has created. Thanks.

From: Lanberg, Susan <Susan.Lanberg@tetratech.com>
Sent: Wednesday, September 15, 2021 11:57 AM
To: Akhter, Shamima <Akhter.Shamima@epa.gov>
Cc: Carlson, Krista <krista.carlson@tetratech.com>; rachel.buzzeo@tetratech.com; Cano, Amanda <AMANDA.CANO@tetratech.com>; John Hochheimer <john.hochheimer@tetratech.com>
Subject: GenX Lite Tech Edit Files

Hi Shamima,

I wanted to let you know that I just uploaded the clean and tracked changes versions of the GenX Chemicals Toxicity Assessment files to the Teams site that EPA set up. We just left two comments in the references section of the clean version as placeholders per EPA's request.

- 091321 DRAFT near final GenX Chemicals Toxicity Assessment_9.12_For TT Tech Edit_Clean.docx
- 091321 DRAFT near final GenX Chemicals Toxicity Assessment_9.12_For TT Tech Edit_TRCH.docx

Please let us know if you have any questions.

Thank you,

Sue

Susan Adair Lanberg | Senior Environmental Scientist, WTR QA Officer
Direct: (703) 385-1906, (703) 385-6000 ext 1906 | Fax: (703)385-6007
susan.lanberg@tetratech.com

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Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 9/15/2021 9:59:47 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: clean GenX doc

Hi Brittany,

Teams won't work – I tried to get the doc from Teams and it glitched. I closed everything down and restarted and now it says I have to update my teams. Tried to do that but it won't update.

Do you have a word copy of the clean final GenX doc?

Thanks,
Sue

Appointment

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 9/16/2021 8:45:06 PM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Small, Matthew [Small.Matthew@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]; roger.brewer@doh.hawaii.gov

Subject: Region 8 Briefing on Final Toxicity Assessment for GenX Chemicals
Location: Microsoft Teams Meeting

Start: 9/23/2021 8:00:00 PM
End: 9/23/2021 9:00:00 PM
Show Time As: Tentative

Required Attendees: Behl, Betsy; Jacobs, Brittany; Small, Matthew; Miller, GregoryG; roger.brewer@doh.hawaii.gov

Dear Region 8,

Please join us for a briefing on the final toxicity assessment for GenX Chemicals, highlighting changes in response to public and peer review comments.

Please forward this invitation to the appropriate regional and state contacts. Please let me know if this meeting time, arranged to work with Hawaii's time zone, needs to be rescheduled due to conflicts.

Materials will be added prior to the meeting.

Sue

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Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 9/16/2021 4:47:31 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: GenX slides - 2 minor points
Attachments: DRAFT 091621 EPA GenX Chems Tox Assessment agency briefing.pptx

FYI re slides –

For the attached slides (converted to pdf), I shrunk the RfD table so that the "DRAFT: DO NOT CITE…" was not covered on that slide (since that's the meat of the presentation and we don't want it shared).

But for your ppt slides (here they are again if you need them but you do not need to use this ver) –

- I left the larger RfD table because it is easier to see and they don't need to see "DRAFT…" while viewing.
- For the UFS slide, if you want to add back the point "Consistent with IRIS precedent on UF_S setting"

If you have any computer glitches, I can share the slides for you. If you have connectivity issues, you can turn off your video – sometimes that helps.

I'm looking forward to it! You will be great!

Sue

Appointment

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 9/16/2021 8:56:35 PM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]; MeghanC3.Williams@wisconsin.gov; Harris, Kimberly [harris.kimberly@epa.gov]; Amy.Klei@epa.ohio.gov; Groetschk@michigan.gov; grayj@michigan.gov; mprater@idem.in.gov; Carol.Hawbaker@illinois.gov

Subject: Region 5 Briefing on Final Toxicity Assessment for GenX Chemicals
Location: Microsoft Teams Meeting

Start: 9/24/2021 1:00:00 PM
End: 9/24/2021 2:00:00 PM
Show Time As: Tentative

Required Attendees: Behl, Betsy; Jacobs, Brittany; Miller, GregoryG; MeghanC3.Williams@wisconsin.gov; Harris, Kimberly; Amy.Klei@epa.ohio.gov; Groetschk@michigan.gov; grayj@michigan.gov; mprater@idem.in.gov; Carol.Hawbaker@illinois.gov

Dear Region 5,

Please join us for a briefing on the final toxicity assessment for GenX Chemicals, highlighting changes in response to public and peer review comments.

Please forward this invitation to the appropriate contacts your region's states and tribes. This date and time works for EPA folks based on Outlook but if the meeting needs to be rescheduled to accommodate other folks, then please let me know.

Materials will be added prior to the meeting.

Sue

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From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 9/16/2021 9:10:56 PM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Small, Matthew [Small.Matthew@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]; roger.brewer@doh.hawaii.gov

Subject: Region 8 Briefing on Final Toxicity Assessment for GenX Chemicals
Location: Microsoft Teams Meeting

Start: 9/23/2021 8:00:00 PM
End: 9/23/2021 9:00:00 PM
Show Time As: Tentative

Required Attendees: Behl, Betsy; Jacobs, Brittany; Small, Matthew; Miller, GregoryG; roger.brewer@doh.hawaii.gov

Dear Region 8,

Please join us for a briefing on the final toxicity assessment for GenX Chemicals, highlighting changes in response to public and peer review comments.

Please forward this invitation to the appropriate contacts in your region's states and tribes. Please let me know if this meeting time, arranged to work with Hawaii's time zone, needs to be rescheduled due to conflicts.

Materials will be added prior to the meeting.

Sue

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From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 9/16/2021 9:26:39 PM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Small, Matthew [Small.Matthew@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]; roger.brewer@doh.hawaii.gov

Subject: Region 9 Briefing on Final Toxicity Assessment for GenX Chemicals
Location: Microsoft Teams Meeting

Start: 9/23/2021 8:00:00 PM
End: 9/23/2021 9:00:00 PM
Show Time As: Tentative

Required Attendees: Behl, Betsy; Jacobs, Brittany; Small, Matthew; Miller, GregoryG; roger.brewer@doh.hawaii.gov

Dear Region 9,

Please join us for a briefing on the final toxicity assessment for GenX Chemicals, highlighting changes in response to public and peer review comments.

Please forward this invitation to the appropriate contacts in your region's states and tribes. Please let me know if this meeting time, arranged to work with Hawaii's time zone, needs to be rescheduled due to conflicts.

Materials will be added prior to the meeting.

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From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 9/16/2021 9:49:58 PM
To: Gloria.Post@dep.state.nj.us; Olsen, Marian [Olsen.Marian@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]
CC: Gloria.Post@dep.nj.gov

Subject: Region 2 Briefing: EPA Final Toxicity Assessment for GenX Chemicals
Location: Microsoft Teams Meeting

Start: 9/23/2021 3:00:00 PM
End: 9/23/2021 4:00:00 PM
Show Time As: Tentative

Required Attendees: Gloria.Post@dep.state.nj.us; Olsen, Marian; Behl, Betsy; Jacobs, Brittany; Miller, GregoryG
Optional Attendees: Post, Gloria [DEP]

Dear Region 2,

Please join us for a briefing on EPA's final toxicity assessment for GenX Chemicals, highlighting changes in response to public and peer review comments.

Please forward this invitation to your appropriate state and tribal contacts in R2. Please let me know if this meeting date and time needs to be rescheduled.

Materials will be added prior to the meeting.

Sue

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From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 9/16/2021 9:40:47 PM
To: Gloria.Post@dep.state.nj.us; Olsen, Marian [Olsen.Marian@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]

Subject: Region 2 GenX Chemicals Final Toxicity Assessment Briefing
Location: Microsoft Teams Meeting

Start: 9/23/2021 3:00:00 PM
End: 9/23/2021 4:00:00 PM
Show Time As: Tentative

Required Attendees: Gloria.Post@dep.state.nj.us; Olsen, Marian; Behl, Betsy; Jacobs, Brittany; Miller, GregoryG

Dear Region 2,

Please join us for a briefing on the final toxicity assessment for GenX Chemicals, highlighting changes in response to public and peer review comments.

Please forward this invitation to your appropriate state and tribal contacts in R2. Please let me know if this meeting date and time needs to be rescheduled.

Materials will be added prior to the meeting.

Sue

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Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 9/17/2021 12:28:52 AM
To: Post, Gloria [DEP] [Gloria.Post@dep.nj.gov]; Olsen, Marian [Olsen.Marian@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: RE: Region 2 Briefing: EPA Final Toxicity Assessment for GenX Chemicals

Hi Gloria,

Thank you for sharing with other toxicologists in NJ.

Appreciate it.
Sue

From: Post, Gloria [DEP] <Gloria.Post@dep.nj.gov>
Sent: Thursday, September 16, 2021 6:07 PM
To: Euling, Susan <Euling.Susan@epa.gov>; Olsen, Marian <Olsen.Marian@epa.gov>; Behl, Betsy <Behl.Betsy@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: Re: Region 2 Briefing: EPA Final Toxicity Assessment for GenX Chemicals

Sue,

Thanks for the invitation. I forwarded it to other toxicologists in my group.

Best regards,
Gloria

Gloria B. Post, Ph.D., DABT
Research Scientist

Division of Science and Research
New Jersey Department of Environmental Protection
Mail Code 428-01, PO Box 420
Trenton, NJ 08625-0420

Telephone: (609) 292-8497
Fax: (609) 292-7340

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Thursday, September 16, 2021 5:49 PM
To: Post, Gloria [DEP] <Gloria.Post@dep.nj.gov>; Olsen, Marian <olsen.marian@epa.gov>; Behl, Betsy <Behl.Betsy@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Cc: Post, Gloria [DEP] <Gloria.Post@dep.nj.gov>
Subject: [EXTERNAL] Region 2 Briefing: EPA Final Toxicity Assessment for GenX Chemicals
When: Thursday, September 23, 2021 11:00 AM-12:00 PM.
Where: Microsoft Teams Meeting

Dear Region 2,

Please join us for a briefing on EPA's final toxicity assessment for GenX Chemicals, highlighting changes in response to public and peer review comments.

Please forward this invitation to your appropriate state and tribal contacts in R2. Please let me know if this meeting date and time needs to be rescheduled.

Materials will be added prior to the meeting.

Sue

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Appointment

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 9/18/2021 6:22:16 PM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Small, Matthew [Small.Matthew@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]; roger.brewer@doh.hawaii.gov; diana.felton@doh.hawaii.gov
CC: Weng, Selena [Weng.Selena@epa.gov]; wendy.linck@waterboards.ca.gov; George, Sarabeth@Waterboards [Sarabeth.George@Waterboards.ca.gov]; Erica.Kalve [Erica.Kalve@Waterboards.ca.gov]; Scott Smale [ssmale@ndep.nv.gov]; panzino.paula@azdeq.gov; Wilson, Patrick [Wilson.Patrick@epa.gov]; Serda, Sophia [Serda.Sophia@epa.gov]; Walter S. Leon Guerrero [walter.leonguerrero@epa.guam.gov]; Li, Corine [Li.Corine@epa.gov]; James, Duane [James.Duane@epa.gov]

Subject: Region 9 Briefing on EPA's Final Toxicity Assessment for GenX Chemicals
Location: Microsoft Teams Meeting

Start: 9/23/2021 8:00:00 PM
End: 9/23/2021 9:00:00 PM
Show Time As: Tentative

Required Attendees: Behl, Betsy; Jacobs, Brittany; Small, Matthew; Miller, GregoryG; roger.brewer@doh.hawaii.gov; diana.felton@doh.hawaii.gov
Optional Attendees: Weng, Selena; wendy.linck@waterboards.ca.gov; George, Sarabeth@Waterboards; Erica.Kalve; Scott Smale; panzino.paula@azdeq.gov; Wilson, Patrick; Serda, Sophia; Walter S. Leon Guerrero; Li, Corine; James, Duane

Dear Region 9,

Please join us for a briefing on the final toxicity assessment for GenX Chemicals, highlighting changes in response to public and peer review comments.

Please forward this invitation to the appropriate contacts in your region's states and tribes. Please let me know if this meeting time, arranged to work with Hawaii's time zone, needs to be rescheduled due to conflicts.

Materials will be added prior to the meeting.

Sue

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Appointment

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 9/18/2021 6:24:14 PM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]; MeghanC3.Williams@wisconsin.gov; Harris, Kimberly [harris.kimberly@epa.gov]; Amy.Klei@epa.ohio.gov; Groetschk@michigan.gov; grayj@michigan.gov; mprater@idem.in.gov; Carol.Hawbaker@illinois.gov
CC: teschlyn.woods@illinois.gov; SarahP.Yang@dhs.wisconsin.gov; helen.goeden@state.mn.us; Braverman, Carole [braverman.carole@epa.gov]; James.kelly@state.mn.us

Subject: Region 5 Briefing on EPA's Final Toxicity Assessment for GenX Chemicals
Location: Microsoft Teams Meeting

Start: 9/24/2021 1:00:00 PM
End: 9/24/2021 2:00:00 PM
Show Time As: Tentative

Required Attendees: Behl, Betsy; Jacobs, Brittany; Miller, GregoryG; MeghanC3.Williams@wisconsin.gov; Harris, Kimberly; Amy.Klei@epa.ohio.gov; Groetschk@michigan.gov; grayj@michigan.gov; mprater@idem.in.gov; Carol.Hawbaker@illinois.gov
Optional Attendees: Woods, Teschlyn; SarahP.Yang@dhs.wisconsin.gov; helen.goeden@state.mn.us; Braverman, Carole; Kelly, James (MDH)

Dear Region 5,

Please join us for a briefing on the final toxicity assessment for GenX Chemicals, highlighting changes in response to public and peer review comments.

Please forward this invitation to the appropriate contacts in your region's states and tribes. Please let me know whether the meeting needs to be rescheduled to accommodate schedules.

Materials will be added prior to the meeting.

Sue

Microsoft Teams meeting

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Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 9/19/2021 11:35:46 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]
CC: Miller, GregoryG [Miller.Gregory@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]
Subject: GenX slides for external audience
Attachments: 091921 EPA Final Toxicity Assessment for GenX chems external audience.pptx; OST Clearance Form B Jacobs GenX external briefing 092321.pdf

Hi Brittany,

Your Agency briefing presentation was excellent. I was especially impressed with how clearly you described the constellation of liver effects and the downstream consequences of the NTP recommendations. It is really complicated – the change to the POD in females and the downstream impacts of that change, and the decision to count adversity by dose group and not individual animal and you skillfully presented the information transparently and with just the right level of detail. I'm sure that the next 4 will go well too.

Attached are the revised slides for Sept. 23rd briefings. You can use for both briefings that day and change the date to Sept. 24th for the next two. I moved the slides from last week into the OW ppt template that was sent around by Erica Weyer last week.

Here are the changes that I made:

1)
2)
3)
4)
5)
6) Corrected a few typos and inconsistencies.

Ex. 5 Deliberative Process (DP)

I have also attached a clearance form filled out and ready for Betsy to sign.

Please send me your final version of the slides – then I can attach a pdf of the slides to the 4 meeting invites before the briefings.

All, let's think more about how to convey the PFOA/S HA level and the GenX comparison. It may be best to focus on the lack of comparability. What about –"**it's important to remember that it is difficult to compare** the 2016 PFOA/S HAs when more data has become available, with a 2021 GenX value whose data and data gaps suggest that there could be other more sensitive endpoints/10X DBUF applied." I'm sure that Greg can come up with something even better.

Sue

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 9/20/2021 2:11:40 PM
To: Flaherty, Colleen [Flaherty.Colleen@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: RE: GENX outreach

Hi Colleen,

Last week, Betsy asked me for table of the scheduled briefings (Agency last week; ATSDR, R2, R4, R5, R9 this week). It was also a way to compile a list of questions that are asked at each briefing. Looks like Betsy combined the table that I made with info in the revised comms plan. Constantly evolving outreach plan.

Sue

From: Flaherty, Colleen <Flaherty.Colleen@epa.gov>
Sent: Monday, September 20, 2021 9:06 AM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>
Cc: Euling, Susan <Euling.Susan@epa.gov>
Subject: FW: GENX outreach

Not sure if she put this table together or took it from the draft comms strategy or what. Maybe we should chat.

From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Friday, September 17, 2021 4:05 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Flaherty, Colleen <Flaherty.Colleen@epa.gov>
Subject: RE: GENX outreach

Ex. 5 Deliberative Process (DP)

Thanks for this. We will get you coms to look at soon. There are a couple of complicated messages to work out.

From: Burneson, Eric <Burneson.Eric@epa.gov>
Sent: Friday, September 17, 2021 11:20 AM
To: Behl, Betsy <Behl.Betsy@epa.gov>
Subject: RE: GENX outreach

Betsy: I checked our calendars and we cant find a timeframe that works well for us to talk today. A couple of thoughts with respect to the rollout plan.

1. **Ex. 5 Deliberative Process (DP)**

Ex. 5 Deliberative Process (DP)

Let me know if you want to discuss any of the above further or if you need more information
Eric

From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Thursday, September 16, 2021 6:44 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Subject: GENX outreach

Eric: this is a draft of the outreach we are planning. If you are available tomorrow Id like to talk it through with you and see if there are people/entities I am missing and get your take on pre-vs post release outreach. I don't think we hav a firm date for release as yet.

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

Elizabeth (Betsy) Behl, Director Health and Ecological Criteria Division,
Office of Science and Technology, Office of Water, EPA
Office: 202-566-0788
Cell Ex. 6 Personal Privacy (PP)

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 9/20/2021 5:51:02 PM
To: Flaherty, Colleen [Flaherty.Colleen@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: RE: revised fact sheet addressing elizabeth's comments.
Attachments: GenX final tox assessment_public fact sheet 8.26.21 + ejc eb sye.docx

Hi Colleen,

Ex. 5 Deliberative Process (DP)

Sue

From: Flaherty, Colleen <Flaherty.Colleen@epa.gov>
Sent: Monday, September 20, 2021 12:45 PM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>; Euling, Susan <Euling.Susan@epa.gov>
Subject: FW: revised fact sheet addressing elizabeth's comments.

Britt/Sue: Is this the most recent version of this or is there an update? I'm trying to track down the latest version of all of these GenX comms docs. Please send them if there are newer versions. Thanks

---

From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Wednesday, September 8, 2021 6:43 PM
To: Euling, Susan <Euling.Susan@epa.gov>
Cc: Flaherty, Colleen <Flaherty.Colleen@epa.gov>
Subject: revised fact sheet addressing elizabeth's comments.

Still contains questions

Appointment

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 9/21/2021 2:30:21 AM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Small, Matthew [Small.Matthew@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]; roger.brewer@doh.hawaii.gov; diana.felton@doh.hawaii.gov
CC: Weng, Selena [Weng.Selena@epa.gov]; wendy.linck@waterboards.ca.gov; George, Sarabeth@Waterboards [Sarabeth.George@Waterboards.ca.gov]; Erica.Kalve [Erica.Kalve@Waterboards.ca.gov]; Scott Smale [ssmale@ndep.nv.gov]; panzino.paula@azdeq.gov; Wilson, Patrick [Wilson.Patrick@epa.gov]; Serda, Sophia [Serda.Sophia@epa.gov]; Walter S. Leon Guerrero [walter.leonguerrero@epa.guam.gov]; Li, Corine [Li.Corine@epa.gov]; James, Duane [James.Duane@epa.gov]

Subject: Canceled: Region 9 Briefing on EPA's Final Toxicity Assessment for GenX Chemicals
Location: Microsoft Teams Meeting

Start: 9/23/2021 8:00:00 PM
End: 9/23/2021 9:00:00 PM
Show Time As: Free

Importance: High

Required Attendees: Behl, Betsy; Jacobs, Brittany; Small, Matthew; Miller, GregoryG; roger.brewer@doh.hawaii.gov; diana.felton@doh.hawaii.gov
Optional Attendees: Weng, Selena; wendy.linck@waterboards.ca.gov; George, Sarabeth@Waterboards; Erica.Kalve; Scott Smale; panzino.paula@azdeq.gov; Wilson, Patrick; Serda, Sophia; Walter S. Leon Guerrero; Li, Corine; James, Duane

Betsy sent new invite.

Dear Region 9,

Please join us for a briefing on the final toxicity assessment for GenX Chemicals, highlighting changes in response to public and peer review comments.

Please forward this invitation to the appropriate contacts in your region's states and tribes. Please let me know if this meeting time, arranged to work with Hawaii's time zone, needs to be rescheduled due to conflicts.

Materials will be added prior to the meeting.

Sue

Microsoft Teams meeting

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Appointment

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 9/21/2021 2:30:27 AM
To: Gloria.Post@dep.state.nj.us; Olsen, Marian [Olsen.Marian@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]
CC: Gloria.Post@dep.nj.gov; Mingzhu.fang@dep.nj.gov

Subject: Canceled: Region 2 Briefing: EPA Final Toxicity Assessment for GenX Chemicals
Location: Microsoft Teams Meeting

Start: 9/23/2021 3:00:00 PM
End: 9/23/2021 4:00:00 PM
Show Time As: Free

Importance: High

Required Attendees: Gloria.Post@dep.state.nj.us; Olsen, Marian; Behl, Betsy; Jacobs, Brittany; Miller, GregoryG
Optional Attendees: Post, Gloria [DEP]; Fang, Mingzhu [DEP]

Dear Region 2,

Please join us for a briefing on EPA's final toxicity assessment for GenX Chemicals, highlighting changes in response to public and peer review comments.

Please forward this invitation to your appropriate state and tribal contacts in R2. Please let me know if this meeting date and time needs to be rescheduled.

Materials will be added prior to the meeting.

Sue

Microsoft Teams meeting

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Appointment

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 9/21/2021 2:30:35 AM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]; MeghanC3.Williams@wisconsin.gov; Harris, Kimberly [harris.kimberly@epa.gov]; Amy.Klei@epa.ohio.gov; Groetschk@michigan.gov; grayj@michigan.gov; mprater@idem.in.gov; Carol.Hawbaker@illinois.gov
CC: teschlyn.woods@illinois.gov; SarahP.Yang@dhs.wisconsin.gov; helen.goeden@state.mn.us; Braverman, Carole [braverman.carole@epa.gov]; James.kelly@state.mn.us

Subject: Canceled: Region 5 Briefing on EPA's Final Toxicity Assessment for GenX Chemicals
Location: Microsoft Teams Meeting

Start: 9/24/2021 1:00:00 PM
End: 9/24/2021 2:00:00 PM
Show Time As: Free

Importance: High

Required Attendees: Behl, Betsy; Jacobs, Brittany; Miller, GregoryG; MeghanC3.Williams@wisconsin.gov; Harris, Kimberly; Amy.Klei@epa.ohio.gov; Groetschk@michigan.gov; grayj@michigan.gov; mprater@idem.in.gov; Carol.Hawbaker@illinois.gov
Optional Attendees: Woods, Teschlyn; SarahP.Yang@dhs.wisconsin.gov; helen.goeden@state.mn.us; Braverman, Carole; Kelly, James (MDH)

Dear Region 5,

Please join us for a briefing on the final toxicity assessment for GenX Chemicals, highlighting changes in response to public and peer review comments.

Please forward this invitation to the appropriate contacts in your region's states and tribes. Please let me know whether the meeting needs to be rescheduled to accommodate schedules.

Materials will be added prior to the meeting.

Sue

Microsoft Teams meeting

Join on your computer or mobile app

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Or call in (audio only)

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Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 9/22/2021 3:00:43 AM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: RE: For Deborah's review: GenX Response to public comments

Great to hear!

Brittany and I have a few final changes to make. I have added "remove ref to roadmap or action plan" as one of the items. Some of the items were vetting language via OLEM and OPPT. I did hear back from OLEM so all set there. I sent you a separate email to bug Tala to get the OPPT responses.

Thanks,
Sue

From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Tuesday, September 21, 2021 7:24 PM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: FW: For Deborah's review: GenX Response to public comments

Congratulations on another major milestone! See suggestion on the roadmap, otherwise good to go. If you need me to clean that up, let me know. Then on to the tech edit?

Woo hoo!!

From: Nagle, Deborah <Nagle.Deborah@epa.gov>
Sent: Tuesday, September 21, 2021 5:57 PM
To: Behl, Betsy <Behl.Betsy@epa.gov>
Cc: Weyer, Erica <weyer.erica@epa.gov>
Subject: RE: For Deborah's review: GenX Response to public comments

Betsy,

The responses are very thoughtful and complete. The team did a great job addressing public comments.

I saw several comment bubbles referring the PFAS Roadmap and to add when complete. My recommendation is that you do not add the roadmap. Our responses are based on information and data we had at the time we developed the rfd for GenX and the PFAS Roadmap was not available at the time.

Other than that, I have no edits or comments. You can work to finalize the Response to Comment document.

Another outstanding product from the GenX team!
-Deborah

From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Thursday, September 16, 2021 6:46 PM
To: Nagle, Deborah <Nagle.Deborah@epa.gov>; Weyer, Erica <weyer.erica@epa.gov>
Subject: FW: For Deborah's review: GenX Response to public comments
Importance: High

Bumping this up for your review before vacation

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Thursday, September 16, 2021 3:55 PM
To: Behl, Betsy <Behl.Betsy@epa.gov>
Subject: FW: For Deborah's review: GenX Response to public comments
Importance: High

From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Thursday, September 9, 2021 1:55 PM
To: Nagle, Deborah <Nagle.Deborah@epa.gov>
Cc: Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>; Weyer, Erica <weyer.erica@epa.gov>
Subject: For Deborah's review: GenX Response to public comments
Importance: High

Deborah,

This is the final document for your review supporting GenX. It is the response to public comments which changed from a previous version as the assessment changed. There are a few things we still need to clean up (some noted with comment bubbles) which you don't need to pay attention to:

- add EPA doc numbers;
- remove reference to PFAS Action Plan and replace with PFAS Roadmap, when available
- add in OGWDW responses (currently waiting to hear back)
- add in any corrections that OPPT or OLEM provide (email sent) on 4 comments pertaining to their programs
- add a statement about the outreach that was done (that we are about to launch; we are meeting tomorrow to strategize about the outreach.

Thanks for your review. And congratulations to Brittany, Greg and Sue for competing this document. It's almost over!

Please let me know if you want to see the track changes version of this.

Betsy

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 9/22/2021 3:09:40 AM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]
CC: Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: RE: GenX slides for external audience

OK attached pdf of the briefing slides for ATSDR meeting now.

From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Tuesday, September 21, 2021 9:28 AM
To: Euling, Susan <Euling.Susan@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Cc: Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: GenX slides for external audience

Please do attach these slides to the ARSDR meeting. Not doing that for the state briefings on Thursday and Friday. We will just show them.

Thanks Sue

Elizabeth (Betsy) Behl, Director Health and Ecological Criteria Division,
Office of Science and Technology, Office of Water, EPA
Office: 202-566-0788
Cell: Ex. 6 Personal Privacy (PP)

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Tuesday, September 21, 2021 9:25 AM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>; Behl, Betsy <Behl.Betsy@epa.gov>
Cc: Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: GenX slides for external audience

Thanks Brittany – sounds like the rearrangements will enhance the flow.

Betsy, let me know whether you want me to attach the slides to the ATSDR briefing mtg. Since they have the GenX document, they may not need the slides anyway. You own the new R2, 4, 5, and 8 meeting invites so can attach if you want.

Sue

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Tuesday, September 21, 2021 2:06 AM
To: Behl, Betsy <Behl.Betsy@epa.gov>; Euling, Susan <Euling.Susan@epa.gov>
Cc: Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: GenX slides for external audience

Hi Betsy and Sue,

Sue, thanks again for updating these slides. I worked a little on the formatting and moved the "incorporating new data" slide up to after the history of the assessment slide. This gives me a chance to talk about how the new studies impacted our decision to change the database uncertainty factor before talking about the second peer review.

Leaving it up to Betsy whether we should attach the slides to the meeting invites.

Britt

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Sunday, September 19, 2021 7:36 PM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>
Cc: Miller, GregoryG <Miller.Gregory@epa.gov>; Behl, Betsy <Behl.Betsy@epa.gov>
Subject: GenX slides for external audience

Hi Brittany,

Your Agency briefing presentation was excellent. I was especially impressed with how clearly you described the constellation of liver effects and the downstream consequences of the NTP recommendations. It is really complicated – the change to the POD in females and the downstream impacts of that change, and the decision to count adversity by dose group and not individual animal and you skillfully presented the information transparently and with just the right level of detail. I'm sure that the next 4 will go well too.

Attached are the revised slides for Sept. 23rd briefings. You can use for both briefings that day and change the date to Sept. 24th for the next two. I moved the slides from last week into the OW ppt template that was sent around by Erica Weyer last week.

Here are the changes that I made:

1)
2)
3)
4)
5)
6) Corrected a few typos and inconsistencies.

Ex. 5 Deliberative Process (DP)

I have also attached a clearance form filled out and ready for Betsy to sign.

Please send me your final version of the slides – then I can attach a pdf of the slides to the 4 meeting invites before the briefings.

All, let's think more about how to convey the PFOA/S HA level and the GenX comparison. It may be best to focus on the lack of comparability. What about –"**it's important to remember that it is difficult to compare** the 2016 PFOA/S HAs when more data has become available, with a 2021 GenX value whose data and data gaps suggest that there could be other more sensitive endpoints/10X DBUF applied." I'm sure that Greg can come up with something even better.

Sue

Appointment

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 9/22/2021 3:16:11 AM
To: gaz5@cdc.gov; Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Donohue, Joyce [Donohue.Joyce@epa.gov]; Soares, Barbara [soares.barbara@epa.gov]; Abadin, Henry (ATSDR/DTHHS/ETB) [hga0@cdc.gov]
CC: Buser, Melanie (ATSDR/OAD/OIA) [wyf9@cdc.gov]; Ruiz, Patricia (ATSDR/OAD/OIA) [doz8@cdc.gov]; Prussia, Andrew James (ATSDR/OAD/OIA) [xby2@cdc.gov]

Subject: ATSDR-EPA discussion of EPA's Toxicity Assessment for GenX chemicals
Attachments: 091921 EPA Final Toxicity Assessment for GenX chems briefing ATSDR DO NOT DISTRIBUTE.pdf
Location: Microsoft Teams Meeting

Start: 9/23/2021 1:00:00 PM
End: 9/23/2021 2:00:00 PM
Show Time As: Tentative

Required Attendees: gaz5@cdc.gov; Jacobs, Brittany; Miller, GregoryG; Behl, Betsy; Donohue, Joyce; Soares, Barbara; Abadin, Henry (ATSDR/DTHHS/ETB)
Optional Attendees: Buser, Melanie (ATSDR/OAD/OIA); Ruiz, Patricia (ATSDR/OAD/OIA); Prussia, Andrew James (ATSDR/OAD/OIA)

This meeting will be an opportunity for ATSDR to provide verbal comments on the pre-publication version of EPA's final toxicity assessment for GenX chemicals.

We look forward to your valuable input.

We request that you please ***DO NOT DISTRIBUTE, CITE, OR QUOTE*** the briefing slides (attached) or the draft document (provided by Betsy).

Thank you.

Susan Euling, Ph.D.
Human Health Risk Assessment Branch/HECD
Office of Science and Technology, Office of Water
U.S. Environmental Protection Agency
(o) 202-566-2717
Ex. 6 Personal Privacy (PP)

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Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 9/22/2021 3:25:06 AM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]
CC: Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: RE: GenX slides for external audience

Hi Betsy,

Thanks for re-doing the invites since they had been spread into wrong hands.

Once you hear from Deborah about the HA and release date commitment, are you thinking that this info would be added to a slide or just shared verbally, in case someone asks?

Sue

From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Tuesday, September 21, 2021 8:33 AM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>; Euling, Susan <Euling.Susan@epa.gov>
Cc: Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: GenX slides for external audience

Ex. 5 Deliberative Process (DP)

Betsy

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Tuesday, September 21, 2021 2:06 AM
To: Behl, Betsy <Behl.Betsy@epa.gov>; Euling, Susan <Euling.Susan@epa.gov>
Cc: Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: GenX slides for external audience

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Leaving it up to Betsy whether we should attach the slides to the meeting invites.

Britt

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Sunday, September 19, 2021 7:36 PM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>
Cc: Miller, GregoryG <Miller.Gregory@epa.gov>; Behl, Betsy <Behl.Betsy@epa.gov>
Subject: GenX slides for external audience

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6) Corrected a few typos and inconsistencies.

Ex. 5 Deliberative Process (DP)

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Sue

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 9/24/2021 9:59:01 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: RE: Region 5 Briefing on Final Toxicity Assessment for GenX Chemicals

Hi Brittany,

Thanks for letting Sophie know what happened – appreciate it.

I did send her an apology about the why the prior invite was cancelled and replaced with a more targeted set of invitees.

Sue

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Friday, September 24, 2021 11:07 AM
To: Behl, Betsy <Behl.Betsy@epa.gov>; Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: Region 5 Briefing on Final Toxicity Assessment for GenX Chemicals

Ex. 5 Deliberative Process (DP)

From: Jacobs, Brittany
Sent: Friday, September 24, 2021 11:05 AM
To: Behl, Betsy <Behl.Betsy@epa.gov>; Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: Region 5 Briefing on Final Toxicity Assessment for GenX Chemicals

I think the original invite was probably forwarded to Sophie/Mn so they wouldn't have gotten the cancellation notice. Sophie messaged me asking what was up so I let her know these briefings were meant for states developing a number.

From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Friday, September 24, 2021 10:59 AM
To: Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: RE: Region 5 Briefing on Final Toxicity Assessment for GenX Chemicals

I didn't see anyone in the waiting room, sorry about that. MN was not invited to this meeting as they were not identified as having GenX guidelines in process.

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Friday, September 24, 2021 10:56 AM
To: Behl, Betsy <Behl.Betsy@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: FW: Region 5 Briefing on Final Toxicity Assessment for GenX Chemicals

Just seeing this now – couldn't get into my laptop until now (in office).

From: Greene, Sophie (MPCA) <Sophie.Greene@state.mn.us>
Sent: Friday, September 24, 2021 9:14 AM
To: Euling, Susan <Euling.Susan@epa.gov>
Subject: RE: Region 5 Briefing on Final Toxicity Assessment for GenX Chemicals

Hello Sue,

I am trying to enter this call but am waiting in the Teams waiting room. Any suggestions?

Thanks!

Sophie

-----Original Appointment-----
From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Friday, September 17, 2021 2:10 PM
To: Euling, Susan; Greene, Sophie (MPCA); Kelly, James (MDH); Behl, Betsy; Jacobs, Brittany; Miller, GregoryG; MeghanC3.Williams@wisconsin.gov; Harris, Kimberly; Amy.Klei@epa.ohio.gov; Groetsch, Kory J. (DHHS); Jennifer Gray; Matt Prater; Carol.Hawbaker@illinois.gov
Cc: teschlyn.woods@illinois.gov; SarahP.Yang@dhs.wisconsin.gov; Goeden, Helen (MDH); Braverman, Carole
Subject: Region 5 Briefing on Final Toxicity Assessment for GenX Chemicals
When: Friday, September 24, 2021 8:00 AM-9:00 AM (UTC-06:00) Central Time (US & Canada).
Where: Microsoft Teams Meeting

-----Original Appointment-----
From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Friday, September 17, 2021 12:34 PM
To: Euling, Susan; Behl, Betsy; Jacobs, Brittany; Miller, GregoryG; MeghanC3.Williams@wisconsin.gov; Harris, Kimberly; Amy.Klei@epa.ohio.gov; Groetsch, Kory J. (DHHS); Jennifer Gray; Matt Prater; Carol.Hawbaker@illinois.gov
Cc: teschlyn.woods@illinois.gov; SarahP.Yang@dhs.wisconsin.gov; Goeden, Helen (MDH); Braverman, Carole
Subject: FW: Region 5 Briefing on Final Toxicity Assessment for GenX Chemicals
When: Friday, September 24, 2021 8:00 AM-9:00 AM (UTC-06:00) Central Time (US & Canada).
Where: Microsoft Teams Meeting

This message may be from an external email source.
Do not select links or open attachments unless verified. Report all suspicious emails to Minnesota IT Services Security Operations Center.

-----Original Appointment-----
From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Thursday, September 16, 2021 3:57 PM
To: Euling, Susan; Behl, Betsy; Jacobs, Brittany; Miller, GregoryG; MeghanC3.Williams@wisconsin.gov; Harris, Kimberly; Amy.Klei@epa.ohio.gov; Groetsch, Kory J. (DHHS); Jennifer Gray; Matt Prater; Carol.Hawbaker@illinois.gov
Cc: teschlyn.woods@illinois.gov
Subject: Region 5 Briefing on Final Toxicity Assessment for GenX Chemicals
When: Friday, September 24, 2021 9:00 AM-10:00 AM (UTC-05:00) Eastern Time (US & Canada).
Where: Microsoft Teams Meeting

Dear Region 5,

Please join us for a briefing on the final toxicity assessment for GenX Chemicals, highlighting changes in response to public and peer review comments.

Please forward this invitation to the appropriate contacts your region's states and tribes. This date and time works for EPA folks based on Outlook but if the meeting needs to be rescheduled to accommodate other folks, then please let me know.

Materials will be added prior to the meeting.

Sue

Microsoft Teams meeting

Join on your computer or mobile app

Click here to join the meeting

Or call in (audio only)

Ex. 6 Personal Privacy (PP) tes, Washington DC

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Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 9/29/2021 4:48:54 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]
CC: Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: RE: closing the loop: GenX Response to public comments

I can make the changes.

Thank you Brittany for your comments, reminders below (that I already had the review back from Ryan!), and the doc number. Great.

Ex. 5 Deliberative Process (DP)

Betsy, also need your input for 3 and 8 (below).

Thanks!
Sue

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Wednesday, September 29, 2021 12:40 PM
To: Euling, Susan <Euling.Susan@epa.gov>; Behl, Betsy <Behl.Betsy@epa.gov>
Cc: Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: closing the loop: GenX Response to public comments
Importance: High

Hi Sue,

Perfect timing, I was just about to turn my attention to this document. See below for my comments in green. If you have time to make these edits that will definitely be a huge help. Then I can move this document and the response to the 2nd peer review to a tech edit.

Thanks!
Britt

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Wednesday, September 29, 2021 12:18 PM
To: Behl, Betsy <Behl.Betsy@epa.gov>
Cc: Miller, GregoryG <Miller.Gregory@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: closing the loop: GenX Response to public comments
Importance: High

Hi Betsy,

I'm circling back about the response to public comments doc. Now that my computer problems have been fixed, I can make the updates but first am checking where you are with things. Attached is the post-tech edit version that Deborah reviewed.

Here is the list of things to address (not addressed in attached 090821 ver):

"I s
you
rfd

Ex. 5 Deliberative Process (DP)

I have the time to make these edits this week (by tomorrow at latest). I will need input from Brittany for 4-6 and Betsy for 3 and 8.

Let me know if you have already done this or what remains to be done.

Thanks,
Sue

From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Thursday, September 9, 2021 1:55 PM
To: Nagle, Deborah <Nagle.Deborah@epa.gov>
Cc: Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>; Weyer, Erica <weyer.erica@epa.gov>
Subject: For Deborah's review: GenX Response to public comments
Importance: High

Deborah,

This is the final document for your review supporting GenX. It is the response to public comments which changed from a previous version as the assessment changed. There are a few things we still need to clean up (some noted with comment bubbles) which you don't need to pay attention to:

- add EPA doc numbers;
- remove reference to PFAS Action Plan and replace with PFAS Roadmap, when available
- add in OGWDW responses (currently waiting to hear back)
- add in any corrections that OPPT or OLEM provide (email sent) on 4 comments pertaining to their programs
- add a statement about the outreach that was done (that we are about to launch; we are meeting tomorrow to strategize about the outreach.

Thanks for your review. And congratulations to Brittany, Greg and Sue for competing this document. It's almost over!

Please let me know if you want to see the track changes version of this.

Betsy

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 9/29/2021 7:35:34 PM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]
CC: Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: RE: closing the loop: GenX Response to public comments

Great, I have most of what I need to finish this up.

When Tala's OK or revisions arrive, please send them my way.

Have a good evening.
Sue

From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Wednesday, September 29, 2021 1:56 PM
To: Euling, Susan <Euling.Susan@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Cc: Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: closing the loop: GenX Response to public comments

See below

Elizabeth (Betsy) Behl, Director Health and Ecological Criteria Division,
Office of Science and Technology, Office of Water, EPA
Office: 202-566-0788
Cell: Ex. 6 Personal Privacy (PP)

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Wednesday, September 29, 2021 12:49 PM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>; Behl, Betsy <Behl.Betsy@epa.gov>
Cc: Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: closing the loop: GenX Response to public comments

I can make the changes.

Thank you Brittany for your comments, reminders below (that I already had the review back from Ryan!), and the doc number. Great.

Ex. 5 Deliberative Process (DP)

Thanks!
Sue

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
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Hi Sue,

Perfect timing, I was just about to turn my attention to this document. See below for my comments in green. If you have time to make these edits that will definitely be a huge help. Then I can move this document and the response to the 2nd peer review to a tech edit.

Thanks!
Britt

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To: Behl, Betsy <Behl.Betsy@epa.gov>
Cc: Miller, GregoryG <Miller.Gregory@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
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Ex. 5 Deliberative Process (DP)

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I have the time to make these edits this week (by tomorrow at latest). I will need input from Brittany for 4-6 and Betsy for 3 and 8.

Let me know if you have already done this or what remains to be done.

Thanks,
Sue

From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Thursday, September 9, 2021 1:55 PM
To: Nagle, Deborah <Nagle.Deborah@epa.gov>
Cc: Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>; Weyer, Erica <weyer.erica@epa.gov>
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Thanks for your review. And congratulations to Brittany, Greg and Sue for competing this document. It's almost over!

Please let me know if you want to see the track changes version of this.

Betsy

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 9/30/2021 2:57:43 AM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: RE: closing the loop: GenX Response to public comments

BTW we already did a tech edit for the RTC public with TT.

Sue

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Wednesday, September 29, 2021 12:40 PM
To: Euling, Susan <Euling.Susan@epa.gov>; Behl, Betsy <Behl.Betsy@epa.gov>
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Let me know if you have already done this or what remains to be done.

Thanks,
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To: Nagle, Deborah <Nagle.Deborah@epa.gov>
Cc: Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>; Jacobs, Brittany

<jacobs.brittany@epa.gov>; Weyer, Erica <weyer.erica@epa.gov>
Subject: For Deborah's review: GenX Response to public comments
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Please let me know if you want to see the track changes version of this.

Betsy

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 10/1/2021 3:43:28 AM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: RE: closing the loop: GenX Response to public comments
Attachments: 093021 ver 090821 ver GenX Assessment Resp to Public Comments_Tech Edit_7.27.2020 CLEAN.docx; 093021 ver 090821 ver GenX Assessment Resp to Public Comments_Tech Edit_7.27.2020 TRACK CHANGES.docx

Importance: High

Hello Betsy, Brittany, and Greg,

The changes that were discussed (email chain below) have been made (clean and tracked changes 093021 vers attached).

Outstanding changes to make:

Ex. 5 Deliberative Process (DP)

(For Tech Edit, please let TT know whether you want to remove or keep header (with date) and footer (draft…) – What is OST format?)

Happy Oct. 1st and with no shutdown. Thank God!

Sue

From: Behl, Betsy <Behl.Betsy@epa.gov>
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Cc: Miller, GregoryG <Miller.Gregory@epa.gov>
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See below

Elizabeth (Betsy) Behl, Director Health and Ecological Criteria Division,
Office of Science and Technology, Office of Water, EPA
Office: 202-566-0788
Cell: Ex. 6 Personal Privacy (PP)

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To: Jacobs, Brittany <jacobs.brittany@epa.gov>; Behl, Betsy <Behl.Betsy@epa.gov>
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Subject: RE: closing the loop: GenX Response to public comments

I can make the changes.

Thank you Brittany for your comments, reminders below (that I already had the review back from Ryan!), and the doc number. Great.

Ex. 5 Deliberative Process (DP)

Betsy, also need your input for 3 and 8 (below). do remove the action plan items. Deborah also wanted us to remove the roadmap items because we haven't seen the roadmap.

Thanks!
Sue

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Wednesday, September 29, 2021 12:40 PM
To: Euling, Susan <Euling.Susan@epa.gov>; Behl, Betsy <Behl.Betsy@epa.gov>
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Let me know if you have already done this or what remains to be done.

Thanks,
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From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Thursday, September 9, 2021 1:55 PM
To: Nagle, Deborah <Nagle.Deborah@epa.gov>
Cc: Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>; Weyer, Erica <weyer.erica@epa.gov>
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Betsy

Message

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Sent: 10/1/2021 5:13:20 AM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]
CC: Behl, Betsy [Behl.Betsy@epa.gov]
Subject: FW: GenX and AFFF
Attachments: 100121 EPA Final Toxicity Assessment for GenX chems high level briefing sye.pptx

Hi Brittany and Greg,

I made these slides for the high level EPA briefing and wanted you to review/revise.

A couple of questions –

-
- **Ex. 5 Deliberative Process (DP)**

Sue

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 10/5/2021 2:20:26 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: RE: GenX Lite Tech Edit Files

OK sounds good.

Sue

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Tuesday, October 5, 2021 10:05 AM
To: Euling, Susan <Euling.Susan@epa.gov>
Subject: RE: GenX Lite Tech Edit Files

Yes, after we okay the tech edits then they would move on to 508 compliance.

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Tuesday, October 5, 2021 10:00 AM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: RE: GenX Lite Tech Edit Files

This would include the 508 compliance, right?

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Tuesday, October 5, 2021 9:04 AM
To: Akhter, Shamima <Akhter.Shamima@epa.gov>
Cc: Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: GenX Lite Tech Edit Files

Hi Shamima,

For now the request is just to complete the tech edit on the response to the 2nd peer review document. The TD was written awhile back when I thought we were sending both at the same time. We are still deciding if the final assessment needs another tech edit. I believe Tetra Tech completed most of the requests in the TD for the final assessment during the "lite" tech edit. Can Tetra Tech let us know if this is true?

Thanks!
Britt

From: Akhter, Shamima <Akhter.Shamima@epa.gov>
Sent: Tuesday, October 5, 2021 8:58 AM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>
Cc: Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: GenX Lite Tech Edit Files

Question from TT:

'I have one initial question about the final assessment document that Brittany mentioned in the TD. Should we work from the most recent clean version we sent you (on 9/15/21) or is there a more recent version from EPA that we should use?'

Please confirm. Thanks.

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Tuesday, October 5, 2021 7:10 AM
To: Akhter, Shamima <Akhter.Shamima@epa.gov>
Cc: Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: GenX Lite Tech Edit Files
Importance: High

Hi Shamima,

I have another GenX document ready for tech edit. This is the response to the additional targeted peer review document. I have loaded it onto the Teams site (see here) that we created for the previous lite tech edit on the assessment document below. It should also be accessible to Sue through the linked document above since she has access to the Teams page. I have also re-attached the technical direction. I am asking that the tech edit on the response to peer review be completed by the end of the week (COB October 8th). Once we review and approve the tech edited document, we will ask Tetra Tech to make it 508 compliant.

Thanks so much Shamima and let me know if there are any questions or concerns.

All the best,
Brittany

From: Akhter, Shamima <Akhter.Shamima@epa.gov>
Sent: Wednesday, September 15, 2021 12:00 PM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Cc: Euling, Susan <Euling.Susan@epa.gov>
Subject: FW: GenX Lite Tech Edit Files

Please see the email below from TT that they have uploaded files to the Teams site that Sue has created. Thanks.

From: Lanberg, Susan <Susan.Lanberg@tetratech.com>
Sent: Wednesday, September 15, 2021 11:57 AM
To: Akhter, Shamima <Akhter.Shamima@epa.gov>
Cc: Carlson, Krista <krista.carlson@tetratech.com>; rachel.buzzeo@tetratech.com; Cano, Amanda <AMANDA.CANO@tetratech.com>; John Hochheimer <john.hochheimer@tetratech.com>
Subject: GenX Lite Tech Edit Files

Hi Shamima,

I wanted to let you know that I just uploaded the clean and tracked changes versions of the GenX Chemicals Toxicity Assessment files to the Teams site that EPA set up. We just left two comments in the references section of the clean version as placeholders per EPA's request.

- 091321 DRAFT near final GenX Chemicals Toxicity Assessment_9.12_For TT Tech Edit_Clean.docx
- 091321 DRAFT near final GenX Chemicals Toxicity Assessment_9.12_For TT Tech Edit_TRCH.docx

Please let us know if you have any questions.

Thank you,

Sue

Susan Adair Lanberg | **Senior Environmental Scientist, WTR QA Officer**
Direct. (703) 385-1906, (703) 385-6000 ext.1906 | Fax: (703)385-6007
susan.lanberg@tetratech.com

Environmental Sciences
Innovative Solutions for Clean Water

Tetra Tech | Complex World, Clear Solutions
10306 Eaton Place, Suite 340 | Fairfax, VA 22030-2201 | www.tetratech.com

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Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 10/5/2021 3:07:08 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: a couple of tech edit decisions to make re response to comments and other GenX docs

Hi Brittany,

Some details for the TT tech edit for the RTC doc

1) I see cases of UFH in RTC doc. You could ask TT to change UFS and UFH to UF_S and UF_H (with subscripts) as is done in the GenX assessment document.
2) header kept (with October 2021) suggest keeping; and footer - should delete *draft* language.

Thanks,
Sue

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 10/5/2021 2:48:28 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]
CC: Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: RE: closing the loop: GenX Response to public comments
Attachments: 100521 093021 ver 090821 ver GenX Assessment Resp to Public Comments_Tech Edit_7.27.2020 CLEAN.docx; 100521 093021 ver 090821 ver GenX Assessment Resp to Public Comments_Tech Edit_7.27.2020 track changes.docx

Made executive decisions (attached track changes and clean) that include Tala's edits and the new GenX number. I did end up keeping the ref to the PFAS council but revised the sentence. See p. 54 for the revision of Ryan's response in track changes ver.

I have to jump on a meeting at 11am.

Sue

From: Euling, Susan
Sent: Tuesday, October 5, 2021 10:27 AM
To: Jacobs, Brittany <Jacobs.Brittany@epa.gov>; Behl, Betsy <Behl.Betsy@epa.gov>
Cc: Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: closing the loop: GenX Response to public comments
Importance: High

Since Betsy may be busy, let's figure this out – I say not include anything about outreach since that was Betsy's second thought.

Ex. 5 Deliberative Process (DP)

Brittany and Greg – OK with those decisions?

Sue

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Tuesday, October 5, 2021 10:04 AM
To: Euling, Susan <Euling.Susan@epa.gov>; Behl, Betsy <Behl.Betsy@epa.gov>
Cc: Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: closing the loop: GenX Response to public comments

Hi Sue,

Thanks for pinging us on these outstanding items and incorporating Tala's responses in this updated version. Here is the doc number for the GenX assessment: 822R21010. I think the other two items are for Betsy. Thanks again for your help with this document.

Britt

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Tuesday, October 5, 2021 9:52 AM
To: Behl, Betsy <Behl.Betsy@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Cc: Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: FW: closing the loop: GenX Response to public comments
Importance: High

Hi Brittany and Betsy,

I am waiting to hear back from you on 3 items below – see yellow highlight.

Happy to make the changes if you let me know the info.

Thanks,
Sue

From: Euling, Susan
Sent: Thursday, September 30, 2021 11:43 PM
To: Behl, Betsy <Behl.Betsy@epa.gov>; Jacobs, Brittany <Jacobs.Brittany@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: closing the loop: GenX Response to public comments
Importance: High

Hello Betsy, Brittany, and Greg,

The changes that were discussed (email chain below) have been made (clean and tracked changes 093021 vers attached).

Outstanding changes to make:

Ex. 5 Deliberative Process (DP)

(For Tech Edit, please let TT know whether you want to remove or keep header (with date) and footer (draft…) – What is OST format?)

Happy Oct. 1st and with no shutdown. Thank God!

Sue

From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Wednesday, September 29, 2021 1:56 PM
To: Euling, Susan <Euling.Susan@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Cc: Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: closing the loop: GenX Response to public comments

See below

Elizabeth (Betsy) Behl, Director Health and Ecological Criteria Division,
Office of Science and Technology, Office of Water, EPA
Office: 202-566-0788
Cell: Ex. 6 Personal Privacy (PP)

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Wednesday, September 29, 2021 12:49 PM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>; Behl, Betsy <Behl.Betsy@epa.gov>
Cc: Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: closing the loop: GenX Response to public comments

I can make the changes.

Thank you Brittany for your comments, reminders below (that I already had the review back from Ryan!), and the doc number. Great.

Ex. 5 Deliberative Process (DP)

Thanks!
Sue

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Wednesday, September 29, 2021 12:40 PM
To: Euling, Susan <Euling.Susan@epa.gov>; Behl, Betsy <Behl.Betsy@epa.gov>
Cc: Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: closing the loop: GenX Response to public comments
Importance: High

Hi Sue,

Perfect timing, I was just about to turn my attention to this document. See below for my comments in green. If you have time to make these edits that will definitely be a huge help. Then I can move this document and the response to the 2nd peer review to a tech edit.

Thanks!
Britt

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Wednesday, September 29, 2021 12:18 PM
To: Behl, Betsy <Behl.Betsy@epa.gov>
Cc: Miller, GregoryG <Miller.Gregory@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: closing the loop: GenX Response to public comments
Importance: High

Hi Betsy,

I'm circling back about the response to public comments doc. Now that my computer problems have been fixed, I can make the updates but first am checking where you are with things. Attached is the post-tech edit version that Deborah reviewed.

Here is the list of things to address (not addressed in attached 090821 ver):

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

I have the time to make these edits this week (by tomorrow at latest). I will need input from Brittany for 4-6 and Betsy for 3 and 8.

Let me know if you have already done this or what remains to be done.

Thanks,
Sue

From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Thursday, September 9, 2021 1:55 PM
To: Nagle, Deborah <Nagle.Deborah@epa.gov>
Cc: Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>; Weyer, Erica <weyer.erica@epa.gov>
Subject: For Deborah's review: GenX Response to public comments
Importance: High

Deborah,

This is the final document for your review supporting GenX. It is the response to public comments which changed from a previous version as the assessment changed. There are a few things we still need to clean up (some noted with comment bubbles) which you don't need to pay attention to:

- add EPA doc numbers;
- remove reference to PFAS Action Plan and replace with PFAS Roadmap, when available
- add in OGWDW responses (currently waiting to hear back)
- add in any corrections that OPPT or OLEM provide (email sent) on 4 comments pertaining to their programs
- add a statement about the outreach that was done (that we are about to launch; we are meeting tomorrow to strategize about the outreach.

Thanks for your review. And congratulations to Brittany, Greg and Sue for competing this document. It's almost over!

Please let me know if you want to see the track changes version of this.

Betsy

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 10/5/2021 5:32:47 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]
CC: Behl, Betsy [Behl.Betsy@epa.gov]
Subject: Quick question -- GenX

Hi Brittany and Greg,

Ex. 5 Deliberative Process (DP)

Sue

From: Euling, Susan
Sent: Friday, October 1, 2021 1:13 AM
To: Jacobs, Brittany <Jacobs.Brittany@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Cc: Behl, Betsy <Behl.Betsy@epa.gov>
Subject: FW: GenX and AFFF

Hi Brittany and Greg,

I made these slides for the high level EPA briefing and wanted you to review/revise.

A couple of questions –

-
- Ex. 5 Deliberative Process (DP)

Sue

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 10/5/2021 5:34:22 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]
CC: Akhter, Shamima [Akhter.Shamima@epa.gov]
Subject: RE: John Hochheimer wants to access 'GenX Assessment Resp to Public Comments_For Tech Edit_10521'

Done

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Tuesday, October 5, 2021 1:23 PM
To: Euling, Susan <Euling.Susan@epa.gov>
Cc: Akhter, Shamima <Akhter.Shamima@epa.gov>
Subject: RE: John Hochheimer wants to access 'GenX Assessment Resp to Public Comments_For Tech Edit_10521'

Hi Sue, since you created the teams page you have to give him access. I just tried but can't. You can hit the accept link below and it should give him access to the doc. Also you can add him as a member to the teams page by clicking the three little dots to the right of the teams page name (GenX TT Lite tech edit), click add member then put in his email address in john.hochheimer@tetratech.com

---

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Tuesday, October 5, 2021 1:19 PM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>
Cc: Akhter, Shamima <Akhter.Shamima@epa.gov>
Subject: FW: John Hochheimer wants to access 'GenX Assessment Resp to Public Comments_For Tech Edit_10521'

I think you have to give him access? Not sure about this request.

From: John Hochheimer <no-reply@sharepointonline.com>
Sent: Tuesday, October 5, 2021 12:57 PM
To: Euling, Susan <Euling.Susan@epa.gov>
Subject: John Hochheimer wants to access 'GenX Assessment Resp to Public Comments_For Tech Edit_10521'

I'd like access, please.

Accept or Decline this request

Requested resource:

Ex. 6 Personal Privacy (PP)

Requested by: John Hochheimer(john.hochheimer@tetratech.com)

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 10/5/2021 5:33:08 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]
CC: Akhter, Shamima [Akhter.Shamima@epa.gov]
Subject: RE: John Hochheimer wants to access 'GenX Assessment Resp to Public Comments_For Tech Edit_10521'

Aha, I thought it was SP.

Will do.

Sue

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Tuesday, October 5, 2021 1:23 PM
To: Euling, Susan <Euling.Susan@epa.gov>
Cc: Akhter, Shamima <Akhter.Shamima@epa.gov>
Subject: RE: John Hochheimer wants to access 'GenX Assessment Resp to Public Comments_For Tech Edit_10521'

Hi Sue, since you created the teams page you have to give him access. I just tried but can't. You can hit the accept link below and it should give him access to the doc. Also you can add him as a member to the teams page by clicking the three little dots to the right of the teams page name (GenX TT Lite tech edit), click add member then put in his email address in john.hochheimer@tetratech.com

---

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Tuesday, October 5, 2021 1:19 PM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>
Cc: Akhter, Shamima <Akhter.Shamima@epa.gov>
Subject: FW: John Hochheimer wants to access 'GenX Assessment Resp to Public Comments_For Tech Edit_10521'

I think you have to give him access? Not sure about this request.

From: John Hochheimer <no-reply@sharepointonline.com>
Sent: Tuesday, October 5, 2021 12:57 PM
To: Euling, Susan <Euling.Susan@epa.gov>
Subject: John Hochheimer wants to access 'GenX Assessment Resp to Public Comments_For Tech Edit_10521'

I'd like access, please.

Accept or Decline this request

Requested resource:

Ex. 6 Personal Privacy (PP)

Requested by: John Hochheimer(john.hochheimer@tetratech.com)

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 10/5/2021 5:42:12 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: RE: TT Lite Tech Edit of the GenX Response to Public Comment

Excellent!

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Tuesday, October 5, 2021 12:44 PM
To: Akhter, Shamima <Akhter.Shamima@epa.gov>
Cc: Miller, GregoryG <Miller.Gregory@epa.gov>; Euling, Susan <Euling.Susan@epa.gov>
Subject: TT Lite Tech Edit of the GenX Response to Public Comment
Importance: High

Hi Shamima,

This might sound like déjà vu, but I have another GenX document ready for a lite tech edit for Tetra Tech followed by 508 compliance. The lite tech edit will be very similar to the tech edit they completed on the assessment a few weeks ago. Tetra Tech did a thorough tech edit of this document a year ago, so I'm hoping this won't take too much time. I've uploaded the document to the teams page here and attached the linked document to this email.

Here is the technical direction:

- Tech edit and 508 compliance completed by October 13th

Please address the following items in the attached document:

- Formatting:
  - one font
  - make sure all call outs are accurate
  - standardized headings (some are all capitals some are not)
- Check grammar/verb tense
- Reference check (are all citations referenced? Are all citations standardized?)
- Change UFS and UFH to UF_S and UF_H (with subscripts)
- Update footer - should delete *draft* language

Once the tech edit is reviewed and okayed by EPA, please make the document 508 compliant.

Thanks so much Shamima and let me know if there are any questions.

All the best,
Brittany

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 10/5/2021 7:29:51 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: RE: update on GenX and PFOA/S

Thanks Brittany! Hang in there.

Setting up a mtg for Tues now.

(thank god for mon holiday…)

Sue

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Tuesday, October 5, 2021 2:28 PM
To: Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: update on GenX and PFOA/S

Meeting on Tuesday morning please.

Ex. 5 Deliberative Process (DP)

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Tuesday, October 5, 2021 2:21 PM
To: Miller, GregoryG <Miller.Gregory@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: RE: update on GenX and PFOA/S

Yeah I have been getting all of the GenX emails but thanks. I think everything is now with TT?

I meant the PFOA, PFOS, and combined tox 3 docs.

Sue

From: Miller, GregoryG <Miller.Gregory@epa.gov>
Sent: Tuesday, October 5, 2021 2:20 PM
To: Euling, Susan <Euling.Susan@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: RE: update on GenX and PFOA/S

Do you mean 3 support docs for GenX? I sat in on the Deborah Biweekly and took this note:

- **BB: Documents she wants ready: (1) GenX assessment, (2) response to 1st PR, (3) response to public comment; (4) response to 2nd PR. Betsy wants all docs ready by 10/13 or 10/12**

Greg Miller, Senior Environmental Health Scientist
Human Health Risk Assessment Branch
Office of Science and Technology, Health and Ecological Criteria Division
US Environmental Protection Agency, Office of Water
1200 Pennsylvania Ave, NW (MC 4304T)
Washington, DC 20460

phone: (202) 566-2310
miller.gregory@epa.gov

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Tuesday, October 5, 2021 2:10 PM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: update on GenX and PFOA/S

Hi Guys,

I need a booster rocket update – would it be best/easiest for you to send me an email of the latest issues/progress or for me to set up a meeting with you for Tues morning to hear status? Pick one.

My burning questions right now are –

- Where are the 3 support docs PFOA/S? With OST management or slated for next week?
- Are you readying for a GenX briefing with Radhika or Administrator?

If this takes time away from what you need to do, no need to respond.

Sue

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 10/5/2021 6:14:09 PM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: RE: please make sure to add this to the genx document regarding uses.

Great info to have! Wow, GenX is such a black box. No transparency.

Betsy, you also dug up this info which is useful because it specifies some products – add to doc?:

- Products used in industrial processes (e.g., piping and cable coatings)
- Products used in consumer products such as cell phones and laptops, in non-stick cookware and in textiles

I dug up this info (for the slides) – the phase out and the fact that it could be in AFFF may be good to include -- add to doc?:

- Replacement for PFOA which was phased out in the US under a 2006 voluntary agreement with EPA (under PFOA Stewardship Program)
- GenX has not been detected in older Aqueous Film Forming Foam (AFFF) formulations that have used PFOA; however, it is not clear whether newer formulations of AFFF do or do not contain GenX

From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Tuesday, October 5, 2021 2:08 PM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>; Euling, Susan <Euling.Susan@epa.gov>
Subject: please make sure to add this to the genx document regarding uses.

Information on specific products containing GenX chemicals is not available, however, GenX chemicals may be used in the manufacture of the same or similar commercial fluoropolymer end products which formerly used PFOA.

GenX chemicals may also be generated as a byproduct of fluromonomer production.

Elizabeth (Betsy) Behl, Director Health and Ecological Criteria Division,
Office of Science and Technology, Office of Water, EPA
Office: 202-566-0788
Cell: Ex. 6 Personal Privacy (PP)

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 10/5/2021 6:24:34 PM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: RE: please make sure to add this to the genx document regarding uses.

OK I see.

I'll remove those two bullets from the slides and replace with this:

- Information on specific products containing GenX chemicals is not available, however, GenX chemicals may be used in the manufacture of the same or similar commercial fluoropolymer end products which formerly used PFOA.
- GenX chemicals may also be generated as a byproduct of fluromonomer production.

Sue

From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Tuesday, October 5, 2021 2:21 PM
To: Euling, Susan <Euling.Susan@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: RE: please make sure to add this to the genx document regarding uses.

I would not add the stuff I dug up. It was from company material and was designed to highlight things that people would want. Ialready left some of that out like medical devices. Bottom line I think the website was biased.

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Tuesday, October 5, 2021 2:14 PM
To: Behl, Betsy <Behl.Betsy@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: RE: please make sure to add this to the genx document regarding uses.

Great info to have! Wow, GenX is such a black box. No transparency.

Betsy, you also dug up this info which is useful because it specifies some products – add to doc?: no

- Products used in industrial processes (e.g., piping and cable coatings)
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I dug up this info (for the slides) – the phase out and the fact that it could be in AFFF may be good to include -- add to doc?: yes

- Replacement for PFOA which was phased out in the US under a 2006 voluntary agreement with EPA (under PFOA Stewardship Program)
- GenX has not been detected in older Aqueous Film Forming Foam (AFFF) formulations that have used PFOA; however, it is not clear whether newer formulations of AFFF do or do not contain GenX

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Sent: Tuesday, October 5, 2021 2:08 PM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>; Euling, Susan <Euling.Susan@epa.gov>
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Elizabeth (Betsy) Behl, Director Health and Ecological Criteria Division,
Office of Science and Technology, Office of Water, EPA
Office: 202-566-0788
Cell: Ex. 6 Personal Privacy (PP)

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 10/5/2021 7:30:28 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: RE: update on GenX and PFOA/S

could you sen me the combined tox draft? it would be good for me to catch up on that moving target now that it has settled.

Thanks!
Sue

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Tuesday, October 5, 2021 2:28 PM
To: Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: update on GenX and PFOA/S

Meeting on Tuesday morning please.

Ex. 5 Deliberative Process (DP)

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Tuesday, October 5, 2021 2:21 PM
To: Miller, GregoryG <Miller.Gregory@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: RE: update on GenX and PFOA/S

Yeah I have been getting all of the GenX emails but thanks. I think everything is now with TT?

I meant the PFOA, PFOS, and combined tox 3 docs.

Sue

From: Miller, GregoryG <Miller.Gregory@epa.gov>
Sent: Tuesday, October 5, 2021 2:20 PM
To: Euling, Susan <Euling.Susan@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: RE: update on GenX and PFOA/S

Do you mean 3 support docs for GenX? I sat in on the Deborah Biweekly and took this note:

- **BB: Documents she wants ready: (1) GenX assessment, (2) response to 1st PR, (3) response to public comment; (4) response to 2nd PR. Betsy wants all docs ready by 10/13 or 10/12**

Greg Miller, Senior Environmental Health Scientist
Human Health Risk Assessment Branch
Office of Science and Technology, Health and Ecological Criteria Division
US Environmental Protection Agency, Office of Water
1200 Pennsylvania Ave, NW (MC 4304T)
Washington, DC 20460

phone: (202) 566-2310
miller.gregory@epa.gov

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Tuesday, October 5, 2021 2:10 PM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: update on GenX and PFOA/S

Hi Guys,

I need a booster rocket update – would it be best/easiest for you to send me an email of the latest issues/progress or for me to set up a meeting with you for Tues morning to hear status? Pick one.

My burning questions right now are –

- Where are the 3 support docs PFOA/S? With OST management or slated for next week?
- Are you readying for a GenX briefing with Radhika or Administrator?

If this takes time away from what you need to do, no need to respond.

Sue

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 10/5/2021 7:43:22 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: RE: update on GenX and PFOA/S

I had a back and forth with Betsy about reason she asked me to make the high level briefing slides. Turns out they are (currently) not for EPA briefings but are for post-release outreach briefings.

Sue

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Tuesday, October 5, 2021 2:28 PM
To: Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: update on GenX and PFOA/S

Meeting on Tuesday morning please.

Ex. 5 Deliberative Process (DP)

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Tuesday, October 5, 2021 2:21 PM
To: Miller, GregoryG <Miller.Gregory@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: RE: update on GenX and PFOA/S

Yeah I have been getting all of the GenX emails but thanks. I think everything is now with TT?

I meant the PFOA, PFOS, and combined tox 3 docs.

Sue

From: Miller, GregoryG <Miller.Gregory@epa.gov>
Sent: Tuesday, October 5, 2021 2:20 PM
To: Euling, Susan <Euling.Susan@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: RE: update on GenX and PFOA/S

Do you mean 3 support docs for GenX? I sat in on the Deborah Biweekly and took this note:

- **BB: Documents she wants ready: (1) GenX assessment, (2) response to 1st PR, (3) response to public comment; (4) response to 2nd PR. Betsy wants all docs ready by 10/13 or 10/12**

Greg Miller, Senior Environmental Health Scientist
Human Health Risk Assessment Branch
Office of Science and Technology, Health and Ecological Criteria Division
US Environmental Protection Agency, Office of Water
1200 Pennsylvania Ave, NW (MC 4304T)
Washington, DC 20460

phone: (202) 566-2310
miller.gregory@epa.gov

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Tuesday, October 5, 2021 2:10 PM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: update on GenX and PFOA/S

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- Are you readying for a GenX briefing with Radhika or Administrator?

If this takes time away from what you need to do, no need to respond.

Sue

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 10/5/2021 7:42:32 PM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: RE: please make sure to add this to the genx document regarding uses.
Attachments: 100521 EPA Final Toxicity Assessment for GenX chems high level briefing sye.pptx

Importance: High

New version of slides (attached)with changes only to Slide 6:

Removed –

- Products used in industrial processes (e.g., piping and cable coatings)
- Products used in consumer products such as cell phones and laptops, in non-stick cookware and in textiles

Replaced with -

- Information on specific products containing GenX chemicals is not available, however, GenX chemicals may be used in the manufacture of the same or similar commercial fluoropolymer end products which formerly used PFOA.

- GenX chemicals may also be generated as a byproduct of fluromonomer production.

From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Tuesday, October 5, 2021 2:21 PM
To: Euling, Susan <Euling.Susan@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: RE: please make sure to add this to the genx document regarding uses.

I would not add the stuff I dug up. It was from company material and was designed to highlight things that people would want. Ialready left some of that out like medical devices. Bottom line I think the website was biased.

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Tuesday, October 5, 2021 2:14 PM
To: Behl, Betsy <Behl.Betsy@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: RE: please make sure to add this to the genx document regarding uses.

Great info to have! Wow, GenX is such a black box. No transparency.

Betsy, you also dug up this info which is useful because it specifies some products – add to doc?: no

- Products used in industrial processes (e.g., piping and cable coatings)
- Products used in consumer products such as cell phones and laptops, in non-stick cookware and in textiles

I dug up this info (for the slides) – the phase out and the fact that it could be in AFFF may be good to include -- add to doc?: yes

- Replacement for PFOA which was phased out in the US under a 2006 voluntary agreement with EPA (under PFOA Stewardship Program)
- GenX has not been detected in older Aqueous Film Forming Foam (AFFF) formulations that have used PFOA; however, it is not clear whether newer formulations of AFFF do or do not contain GenX

From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Tuesday, October 5, 2021 2:08 PM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>; Euling, Susan <Euling.Susan@epa.gov>
Subject: please make sure to add this to the genx document regarding uses.

Information on specific products containing GenX chemicals is not available, however, GenX chemicals may be used in the manufacture of the same or similar commercial fluoropolymer end products which formerly used PFOA.

GenX chemicals may also be generated as a byproduct of fluromonomer production.

Elizabeth (Betsy) Behl, Director Health and Ecological Criteria Division,
Office of Science and Technology, Office of Water, EPA
Office: 202-566-0788
Cell: Ex. 6 Personal Privacy (PP)

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 10/6/2021 2:48:01 AM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: Updated high level GenX briefing ppt
Attachments: 100621 EPA Final Toxicity Assessment for GenX chems high level briefing sye bb comments addressed.pptx

Comments addressed in this version.

Sue

From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Tuesday, October 5, 2021 3:50 PM
To: Euling, Susan <Euling.Susan@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: RE: please make sure to add this to the genx document regarding uses.

Making sure I sent you my comments on this. Will share the comms materials developed

---

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Tuesday, October 5, 2021 3:43 PM
To: Behl, Betsy <Behl.Betsy@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: RE: please make sure to add this to the genx document regarding uses.
Importance: High

New version of slides (attached)with changes only to Slide 6:

Removed –

- Products used in industrial processes (e.g., piping and cable coatings)
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Replaced with -

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To: Euling, Susan <Euling.Susan@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
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To: Jacobs, Brittany <jacobs.brittany@epa.gov>; Euling, Susan <Euling.Susan@epa.gov>
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Elizabeth (Betsy) Behl, Director Health and Ecological Criteria Division,
Office of Science and Technology, Office of Water, EPA
Office: 202-566-0788
Cell: Ex. 6 Personal Privacy (PP)

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 10/12/2021 9:05:46 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: GenX briefing

I'm excited to be at the briefing tomorrow since I couldn't attend any of the prior outreach ones (only the Agency one)!

It's going to be great!

Sue

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 10/13/2021 4:09:29 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: 3 GenX chemicals from Fayetteville facility listed in NC consent order

https://www.epa.gov/sites/default/files/2020-10/documents/chemours_pfas_testing_petition_final.pdf

"The Fayetteville facility began producing PFOA in 2001 following the 3M phaseout, but as concerns about PFOA mounted, efforts were undertaken to find a shorter-chain PFAS that could replace PFOA as a processing aid (surfactant) in manufacture of Teflon fluoropolymers. The result was commercialization of a group of compounds with the GenX tradename. According to the North Carolina consent order,[23] these chemicals consist of the C3 Dimer Acid (also known as Hexafluoropropylene Oxide (HFPO) Dimer Acid), CAS No. 13252-13-6; the C3 Dimer Acid Fluoride (also known as HFPO Dimer Acid Fluoride), CAS No. 2062-98-8; and the C3 Dimer Acid Ammonium Salt (also known as HFPO Dimer Acid Ammonium Salt), CAS No. 62037-80-3. (HFPO is also a building block chemical for several other PFAS-based products manufactured at the facility and is sold commercially)."

The consent order reference (23) is: Geosyntec Consultants. Chemours Correct Active Plan - Appendix A: Onsite and Offsite Assessment Tables, (2020). https://files.nc.gov/ncdeq/GenX/consentorder/paragraph-16/FW-CAP-FINAL-12-31-2019-Appendix-A.pdf

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 10/13/2021 5:37:53 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: RE: GenX OMB briefing

excellent!

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Wednesday, October 13, 2021 1:08 PM
To: Euling, Susan <Euling.Susan@epa.gov>
Subject: RE: GenX OMB briefing

Ha, I did!

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Wednesday, October 13, 2021 12:57 PM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: GenX OMB briefing

Let me know if you need anything from me prior to the briefing. I'm assuming you deleted the kayak…?

Sue

Appointment

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 10/14/2021 4:01:51 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]

Subject: troubleshooting GenX
Location: Microsoft Teams Meeting

Start: 10/14/2021 8:00:00 PM
End: 10/14/2021 8:30:00 PM
Show Time As: Tentative

Required Attendees: Jacobs, Brittany; Miller, GregoryG

I have a meeting with Colleen and Betsy at 4:30pm and would like to gather input from you prior to that meeting. Greg, do you think you can get the answer or partial answer to #2 before this meeting?

1) Check in on GenX
    a. Post-release outreach
    b. Comms plan status
    c. HFPO-DA acyl fluoride issue and email response
2) Additional PFOA/S funding needs through Nov. 11th

Microsoft Teams meeting

Join on your computer or mobile app
Click here to join the meeting

Or call in (audio only)

Ex. 6 Personal Privacy (PP) tates, Washington DC

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By participating in EPA hosted virtual meetings and events, you are consenting to abide by the agency's terms of use. In addition, you acknowledge that content you post may be collected and used in support of FOIA and eDiscovery activities.

Learn More | Meeting options

Appointment

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 10/14/2021 5:04:24 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]

Subject: troubleshooting GenX
Location: Microsoft Teams Meeting

Start: 10/14/2021 6:00:00 PM
End: 10/14/2021 6:30:00 PM
Show Time As: Tentative

Required Attendees: Jacobs, Brittany; Miller, GregoryG

I have a meeting with Colleen and Betsy at 4:30pm and would like to gather input from you prior to that meeting. Greg, do you think you can get the answer or partial answer to #2 before this meeting?

1) Check in on GenX
    a. Post-release outreach
    b. Comms plan status
    c. HFPO-DA acyl fluoride issue and email response
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Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 10/14/2021 7:44:17 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: FW: Do you have comms materials for GenX?

Here's an update –

- we know nothing more about the fact sheets and whether HAs included as next steps.
- my mtg with Betsy and Colleen is tomorrow morning now – good news there is more time to hear back from ICF on funds for PFOA/S

Sue

From: Flaherty, Colleen <Flaherty.Colleen@epa.gov>
Sent: Thursday, October 14, 2021 3:01 PM
To: Risley, David <Risley.David@epa.gov>
Cc: Behl, Betsy <Behl.Betsy@epa.gov>; Euling, Susan <Euling.Susan@epa.gov>
Subject: RE: Do you have comms materials for GenX?

David, any feedback on the highlighted sections in our fact sheets re: HAs? We'd like to finalize and pdf/508. Thanks.

From: Risley, David <Risley.David@epa.gov>
Sent: Wednesday, October 13, 2021 10:42 AM
To: Flaherty, Colleen <Flaherty.Colleen@epa.gov>; Behl, Betsy <Behl.Betsy@epa.gov>
Subject: FW: Do you have comms materials for GenX?

Hi Colleen and Betsy, can you please advise on Andrea's questions?

David Risley
Office of Water Communications, Director
Risley.David@epa.gov
Office: 202-343-9177
Cell: 202-731-3068

From: Drinkard, Andrea <Drinkard.Andrea@epa.gov>
Sent: Wednesday, October 13, 2021 10:40 AM
To: Risley, David <Risley.David@epa.gov>; Schafer, Zach <Schafer.Zach@epa.gov>
Subject: RE: Do you have comms materials for GenX?

Ex. 5 Deliberative Process (DP)

No matter what I do I get the HA language wrong, so forgive me in advance for trying.

From: Risley, David <Risley.David@epa.gov>
Sent: Wednesday, October 13, 2021 9:56 AM
To: Drinkard, Andrea <Drinkard.Andrea@epa.gov>; Schafer, Zach <Schafer.Zach@epa.gov>
Subject: RE: Do you have comms materials for GenX?

Edits from OST:

Ex. 5 Deliberative Process (DP)

David Risley
Office of Water Communications, Director
Risley.David@epa.gov
Office: 202-343-9177
Cell: 202-731-3068

From: Risley, David
Sent: Wednesday, October 13, 2021 9:43 AM
To: Drinkard, Andrea <Drinkard.Andrea@epa.gov>; Schafer, Zach <Schafer.Zach@epa.gov>
Subject: RE: Do you have comms materials for GenX?

Here's a draft paragraph. Zach, any heartburn—especially the highlighted sentence?

Ex. 5 Deliberative Process (DP)

sulfonate (PFBS).

David Risley
Office of Water Communications, Director
Risley.David@epa.gov
Office: 202-343-9177
Cell: 202-731-3068

From: Drinkard, Andrea <Drinkard.Andrea@epa.gov>
Sent: Wednesday, October 13, 2021 9:03 AM

To: Risley, David <Risley.David@epa.gov>; Schafer, Zach <Schafer.Zach@epa.gov>
Subject: RE: Do you have comms materials for GenX?

Yes, please send ASAP!

From: Risley, David <Risley.David@epa.gov>
Sent: Tuesday, October 12, 2021 11:24 PM
To: Schafer, Zach <Schafer.Zach@epa.gov>; Drinkard, Andrea <Drinkard.Andrea@epa.gov>
Subject: RE: Do you have comms materials for GenX?

Yes. Can I get it to you first thing in the morning? Like by 9:00?

David Risley
Office of Water Communications, Director
Risley.David@epa.gov
Office: 202-343-9177
Cell: 202-731-3068

From: Schafer, Zach <Schafer.Zach@epa.gov>
Sent: Tuesday, October 12, 2021 11:23 PM
To: Drinkard, Andrea <Drinkard.Andrea@epa.gov>; Risley, David <Risley.David@epa.gov>
Subject: RE: Do you have comms materials for GenX?

I do not have any – David, do you have from OST?

From: Drinkard, Andrea <Drinkard.Andrea@epa.gov>
Sent: Tuesday, October 12, 2021 7:56 PM
To: Schafer, Zach <Schafer.Zach@epa.gov>; Risley, David <Risley.David@epa.gov>
Subject: Do you have comms materials for GenX?

Can you forward tonight, if possible?

Andrea Drinkard
Senior Advisor to the Deputy Administrator
U.S. Environmental Protection Agency
Desk: 202.564.1601
Cell: 202.236.7765

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 10/15/2021 4:07:57 AM
To: Miller, GregoryG [Miller.Gregory@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: GenX post-release briefings in roll out

Briefing for Water stakeholder organizations: AWWA, AMWA, NRWA, RCAP,	Week of 10/18	**Betsy Behl and staff**
Briefing for Environmental stakeholder organizations: NRDC, Environmental Defense Fund, Clean Water Action (CWA), and Environmental Working Group.	Week of 10/18	**Betsy Behl and staff**
Briefing for State organizations: ASTHO, ECOS ACWA, ASDWA, FSTRAC, ASTHWAMO, OEHHA? nacho?	Week of 10/18	**Betsy Behl and staff**
Briefing for Federal Agencies: TWG (OMB ATSDR, DOD, HHS-OS, FDA, HHS-NIEHS, HHS-NIOSH, HHS-CDC-ONDIEH, NASA, USGS, VA, DOE)	Week of 10/18	**Betsy Behl and staff**
Public webinar	Week of 11/1	**Betsy Behl and staff**
Briefing for CHPAC	11/2-3/21	**Betsy Behl and staff**

My guess is that the first three would be very high level and the last 3 would be more technical. I'll confirm with Betsy.

Sue

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 10/15/2021 7:53:07 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: good news!

OK so my new laptop is putting me in a good mood....and so is my conversation with Betsy about

1) Ex. 5 Deliberative Process (DP)

EPA OECA enforcement		**TBD Contact Joe Theis**
Briefing for Water stakeholder organizations: AWWA, AMWA, NRWA, RCAP,	Week of 10/18	**Betsy Behl and staff**
Briefing for Environmental stakeholder organizations: NRDC, Environmental Defense Fund, Clean Water Action (CWA), and Environmental Working Group.	Week of 10/18	**Betsy Behl and staff**
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Briefing for Federal Agencies: TWG (OMB ATSDR, DOD, HHS-OS, FDA, HHS-NIEHS, HHS-NIOSH, HHS-CDC-ONDIEH, NASA, USGS, VA, DOE)	Week of 10/18	**Betsy Behl and staff**
Public webinar	Week of 11/1	**Betsy Behl and staff**
Briefing for CHPAC	11/2-3/21	**Betsy Behl and staff**
OHHRRHF (superfund)	TBD	Michelle Burgess is POC

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

Sue

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 10/15/2021 8:36:02 PM
To: Miller, GregoryG [Miller.Gregory@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: FW: add to rollout
Attachments: GenX Final Tox Assess_Comms Plan OST_10.8.21.docx

Do you think it is "fluromonomer" or "fluoromonomer"? I see both when I google them.

Sue

From: Flaherty, Colleen <Flaherty.Colleen@epa.gov>
Sent: Thursday, October 14, 2021 5:07 PM
To: Behl, Betsy <Behl.Betsy@epa.gov>
Cc: Euling, Susan <Euling.Susan@epa.gov>
Subject: RE: add to rollout

Here's the updated rollout

From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Thursday, October 14, 2021 10:28 AM
To: Flaherty, Colleen <Flaherty.Colleen@epa.gov>
Subject: add to rollout

OMB Technical working Group on PFAS	April Kleuver, Lead	april.n.kluever Ex. 6 Personal Privacy (PP)	Betsy Behl

OMB asked for an email on the day of release. Please add to the rollout.

Elizabeth (Betsy) Behl, Director Health and Ecological Criteria Division,
Office of Science and Technology, Office of Water, EPA
Office: 202-566-0788
Cell: Ex. 6 Personal Privacy (PP)

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 10/18/2021 4:33:03 PM
To: Miller, GregoryG [Miller.Gregory@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: GenX outreach - update

Betsy talked to Deborah about moving the post-release outreach by a week and it looks like that was accepted. That would mean nothing next week allowing more time for PFOA/S work.

- outreach to various groups first week Nov.
- public webinar 2nd week of Nov.

Sue

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 10/20/2021 2:23:55 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: FW: Final GenX docs

Hi Brittany,

I have what came back from Tetratech but I don't know whether you have made any minor tweaks since that time. Could you respond to Colleen?

Thanks,
Sue

From: Flaherty, Colleen <Flaherty.Colleen@epa.gov>
Sent: Wednesday, October 20, 2021 10:23 AM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>; Euling, Susan <Euling.Susan@epa.gov>
Cc: Behl, Betsy <Behl.Betsy@epa.gov>
Subject: Final GenX docs

Britt/Sue,

Can one of you please send me all of the final docs (assessment, response to peer/public comments) for GenX? I'm working on the web language now.

Thanks,
Colleen

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 10/20/2021 3:28:47 PM
To: Miller, GregoryG [Miller.Gregory@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: FW: Quick question: Cal EPA PFOA/S draft assessment discussion this Friday

Colleen is not able to attend the call. Have general guidance for sharing on GenX and combined tox approach from Betsy:

From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Wednesday, October 20, 2021 11:26 AM
To: Euling, Susan <Euling.Susan@epa.gov>; Flaherty, Colleen <Flaherty.Colleen@epa.gov>
Subject: RE: Quick question: Cal EPA PFOA/S draft assessment discussion this Friday

So, GenX is delayed, so you cant tell them the RfD but you could say things in general.

Sharing the mixtures approach is fine. It is based on the epa mixtures guidance, so its an application not a secret new thing.

I will probably be in transit at the time of the call so wont be able to join. I will be interested to know if you hear something new

---

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Wednesday, October 20, 2021 10:01 AM
To: Flaherty, Colleen <Flaherty.Colleen@epa.gov>; Behl, Betsy <Behl.Betsy@epa.gov>
Subject: Quick question: Cal EPA PFOA/S draft assessment discussion this Friday

Hi Colleen and Betsy,

A couple of things came up on our pre-meet this morning (after you jumped off Betsy) – GenX will just be out and that adds to the topic of how to deal with PFAS beyond PFOA and PFOS. They are probably interested in the combined tox approach doc. If we discuss mixtures and groupings and what CalEPA is considering, then can we share about the EPA approach with CalEPA? Would like to know what we can share and even better, whether one of you will be able to attend the meeting.

The meeting is this Friday 1-2:30pm (east coast time).

Thanks for considering it.

Sue

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 10/20/2021 5:29:58 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: RE: GenX Technical Fact Sheet - quick check

I've left it as is. Just sounds like an out of context sentence. No problem.

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Wednesday, October 20, 2021 6:07 AM
To: Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: GenX Technical Fact Sheet - quick check

Hi Sue,

This was the language we took from the NTP final report. I think it's okay for it to come out of the technical fact sheet but I wouldn't replace it with liver pathology studies since they specifically stated it represented adversity within the confines of the study.

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Wednesday, October 20, 2021 12:49 AM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: GenX Technical Fact Sheet - quick check

"The selection of the constellation of lesions is supported by the National Toxicology Program (NTP) Pathology Working Group's (PWG) conclusion that the dose response and constellation of lesions (i.e., cytoplasmic alteration, apoptosis, single-cell necrosis, and focal necrosis) rather than one lesion by itself, represents adversity within the confines of the study."

Is this necessary or confusing to the uninitiated?

Do you mean – represents adversity in liver pathology studies?

Thanks,
Sue

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 10/21/2021 1:40:57 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: RE: Need your input: GenX outreach slides

Thanks!

The post-release briefings will have slides.

Sue

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Thursday, October 21, 2021 8:14 AM
To: Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: Need your input: GenX outreach slides

See below. Greg will send the powerpoint that we both reviewed shortly.

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Wednesday, October 20, 2021 8:32 PM
To: Miller, GregoryG <Miller.Gregory@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: Need your input: GenX outreach slides

Hi Greg and Brittany,

I walked through Betsy's latest version of the "overview" high level briefing (attached) that she has been giving today. There are a couple of places to fill in for the post-release briefings. Could you help?:

Ex. 5 Deliberative Process (DP)

seems fine

ated

Ex. 5 Deliberative Process (DP)

ed

I would appreciate your review.

Thanks,
Sue

From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Wednesday, October 20, 2021 4:54 PM
To: Euling, Susan <Euling.Susan@epa.gov>
Subject: GenX

Elizabeth (Betsy) Behl, Director Health and Ecological Criteria Division,
Office of Science and Technology, Office of Water, EPA
Office: 202-566-0788
Cell: Ex. 6 Personal Privacy (PP)

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 10/21/2021 12:32:21 AM
To: Miller, GregoryG [Miller.Gregory@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: Need your input: GenX outreach slides
Attachments: Final Toxicity Assessment for GenX chems--public outreach 101921.pptx

Hi Greg and Brittany,

I walked through Betsy's latest version of the "overview" high level briefing (attached) that she has been giving today. There are a couple of places to fill in for the post-release briefings. Could you help?:

Ex. 5 Deliberative Process (DP)

I would appreciate your review.

Thanks,
Sue

From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Wednesday, October 20, 2021 4:54 PM
To: Euling, Susan <Euling.Susan@epa.gov>
Subject: GenX

Elizabeth (Betsy) Behl, Director Health and Ecological Criteria Division,
Office of Science and Technology, Office of Water, EPA
Office: 202-566-0788
Cell: Ex. 6 Personal Privacy (PP)

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 10/21/2021 5:01:27 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: Please respond today: latest comms for GenX

<!--[if lte mso 15 || CheckWebRef]-->

Euling, Susan has shared a OneDrive for Business file with you. To view it, click the link below.

outreach schedule102021.docx

<!--[endif]-->

Hi Brittany and Greg,

Betsy updated the outreach schedule (Can you guys see the file?).

I'd like to know which ones you want to do so that I can start scheduling them.

I want to accommodate your wishes for presentations – you guys are the leads and should enjoy the glory! And ones you cannot do, Betsy or I will do.

Brittany, you want to do the ones that will be technical, correct? My sense from talking to Betsy is – TWG (already scheduled); FSTRAC; maybe CHPAC?

Greg, please let me know which ones you would like to do. CHPAC? Others?

My understanding is that Betsy cannot do the CHPAC one because she is at a Biosolids conference. I'll double check with her today.

Thanks!
Sue

From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Wednesday, October 20, 2021 6:54 PM
To: Euling, Susan <Euling.Susan@epa.gov>
Subject: RE: latest comms for GenX

This is what I was working on. Feel free to edit

NC meeting was fine. No hard questions.

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Wednesday, October 20, 2021 5:17 PM
To: Behl, Betsy <Behl.Betsy@epa.gov>
Subject: latest comms for GenX

Could you send me the latest version that you were editing on screen just now? I want to share it with B and G.

Thanks,
Sue

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 10/21/2021 6:14:46 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: RE: Please respond today: latest comms for GenX

OK thanks.

Greg, just sent email to OCHP and cced you.

Sue

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Thursday, October 21, 2021 2:13 PM
To: Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: Please respond today: latest comms for GenX

Okay

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Thursday, October 21, 2021 1:51 PM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: Please respond today: latest comms for GenX

- Public one is best for you because it could become technical. Are you good with that?
- Other than CHPAC (Greg), TWG (Brittany), FSTRAC (Brittany) --- probably all high level is what Betsy thinks.

Ex. 5 Deliberative Process (DP)

If any of them are of interest to you, then let me know. Betsy in the file now…

Sue

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Thursday, October 21, 2021 1:41 PM
To: Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: Please respond today: latest comms for GenX

Happy to do the other technical briefings outside of CHPAC since Greg will do that one. I can't tell from the outreach doc which ones will be technical, but you can sign me up for technical briefings.

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Thursday, October 21, 2021 1:26 PM
To: Miller, GregoryG <Miller.Gregory@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: RE: Please respond today: latest comms for GenX

Betsy will share link with you now.

Great about CHPAC. Someone from OCHP will contact you about the available slots.

From: Miller, GregoryG <Miller.Gregory@epa.gov>
Sent: Thursday, October 21, 2021 1:23 PM
To: Euling, Susan <Euling.Susan@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: RE: Please respond today: latest comms for GenX

I can't access the file. I can do CHPAC assuming it fits on my schedule.

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Thursday, October 21, 2021 1:01 PM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: Please respond today: latest comms for GenX

Hi Brittany and Greg,

Betsy updated the outreach schedule (Can you guys see the file?).

I'd like to know which ones you want to do so that I can start scheduling them.

I want to accommodate your wishes for presentations – you guys are the leads and should enjoy the glory! And ones you cannot do, Betsy or I will do.

Brittany, you want to do the ones that will be technical, correct? My sense from talking to Betsy is – TWG (already scheduled); FSTRAC; maybe CHPAC?

Greg, please let me know which ones you would like to do. CHPAC? Others?

My understanding is that Betsy cannot do the CHPAC one because she is at a Biosolids conference. I'll double check with her today.

Thanks!
Sue

From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Wednesday, October 20, 2021 6:54 PM
To: Euling, Susan <Euling.Susan@epa.gov>
Subject: RE: latest comms for GenX

This is what I was working on. Feel free to edit

NC meeting was fine. No hard questions.

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Wednesday, October 20, 2021 5:17 PM
To: Behl, Betsy <Behl.Betsy@epa.gov>
Subject: latest comms for GenX

Could you send me the latest version that you were editing on screen just now? I want to share it with B and G.

Thanks,
Sue

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 10/22/2021 2:06:55 AM
To: Akhter, Shamima [Akhter.Shamima@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]
CC: Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: RE: Word docs_508-Compliant Versions of the GenX Response to Public Comments and Response to Peer Reviewer Comments Documents

Correction –Cara only needs the final assessment doc. Here is her email:

Sue- when you receive the final assessment document from Brittany for the web, please pass it along to me and Christina (we have the two response documents already). Thanks

---

From: Euling, Susan
Sent: Thursday, October 21, 2021 10:05 PM
To: Akhter, Shamima <Akhter.Shamima@epa.gov>; Jacobs, Brittany <Jacobs.Brittany@epa.gov>
Cc: Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: Word docs_508-Compliant Versions of the GenX Response to Public Comments and Response to Peer Reviewer Comments Documents
Importance: High

Thank you Shamima!

Brittany,

Could you check the new version from TT (below) and then send all final materials to Betsy, Cara, and me (or just to me and I can send on to Cara and Betsy). Cara needs it by tomorrow late morning.

Thanks,
Sue

From: Akhter, Shamima <Akhter.Shamima@epa.gov>
Sent: Thursday, October 21, 2021 9:41 PM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>
Cc: Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: Word docs_508-Compliant Versions of the GenX Response to Public Comments and Response to Peer Reviewer Comments Documents

Just heard from TT:

'TT uploaded the updated version of the 508-compliant GenX document to the Teams site that EPA set up for this project. Let us know if you have any questions.'

Thanks.

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Thursday, October 21, 2021 12:15 PM
To: Akhter, Shamima <Akhter.Shamima@epa.gov>
Cc: Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>

Subject: RE: Word docs_508-Compliant Versions of the GenX Response to Public Comments and Response to Peer Reviewer Comments Documents
Importance: High

Hi Shamima,

Good morning. I am just realizing I needed to add some additional names to the acknowledgement page of the final GenX chemicals toxicity assessment. I have made the edits in the attached Word document which is also on the Teams site and I copied the updated language below in case that's easier for Tetra Tech.

The technical direction is to update the 508 compliant Final GenX Chemicals Toxicity Assessment with the updated acknowledgements paragraph. The timing on this is ASAP, latest by noon tomorrow. Thanks so much and sorry for the quick turnaround.

This document was prepared by the Health and Ecological Criteria Division, Office of Science and Technology, Office of Water (OW) of the U.S. Environmental Protection Agency (EPA). OW leads for the assessment include Brittany Jacobs, PhD; Greg Miller, MS; and Jamie Strong, PhD. OW scientists who provided valuable contributions to the development of this assessment include Joyce Donohue, PhD, Barbara Soares, PhD; Casey Lindberg, PhD; and Susan Euling, PhD. The agency gratefully acknowledges the valuable contributions of EPA scientists from the Office of Research and Development (ORD), including Earl Gray, PhD; Justin Conley, PhD; the ORD Statistical Working Group, especially Christine Cai PhD; Beth Owens, PhD; Jason Lambert, PhD; Samantha Jones, PhD; and Kris Thayer, PhD. The agency gratefully acknowledges the valuable contributions of scientists from the National Institute of Environmental Health Sciences Suzanne Fenton, PhD and Bevin Blake, PhD. The agency gratefully acknowledges the valuable contributions of EPA scientists from the Office of Pollution Prevention and Toxics, including Catherine Aubee; Amy Babcock, MPH, DABT, MRSB; Amy Benson, MS, DABT; Tracy Behrsing, PhD; Chris Brinkerhoff, PhD; Tala Henry, PhD; and Laurence Libelo, PhD.

The systematic review work included in this assessment was prepared in collaboration with ICF Incorporated, LLC under the U.S. EPA Contract No. EP-C-16-011, Work Assignment No. 4-16.

From: Akhter, Shamima <Akhter.Shamima@epa.gov>
Sent: Thursday, October 14, 2021 8:34 AM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>
Cc: Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: FW: Word docs_508-Compliant Versions of the GenX Response to Public Comments and Response to Peer Reviewer Comments Documents

TT just uploaded the tech edited "clean" version of the GenX toxicity assessment to the Teams site that Sue E set up for this project.

From: Akhter, Shamima
Sent: Thursday, October 14, 2021 8:30 AM
To: Jacobs, Brittany <Jacobs.Brittany@epa.gov>
Cc: Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: FW: Word docs_508-Compliant Versions of the GenX Response to Public Comments and Response to Peer Reviewer Comments Documents

From TT:

‘Attached please find the final Word documents for the GenX response to public comments and response to peer review comments documents. I’ll upload the final Word version of the GenX toxicity assessment document to EPA’s Teams site next and let you know when it’s available.’

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 10/22/2021 12:34:35 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: RE: genx documents

Thank you Brittany!

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Friday, October 22, 2021 6:08 AM
To: Behl, Betsy <Behl.Betsy@epa.gov>; Euling, Susan <Euling.Susan@epa.gov>; Flaherty, Colleen <Flaherty.Colleen@epa.gov>; Lalley, Cara <Lalley.Cara@epa.gov>; Wadlington, Christina <Wadlington.Christina@epa.gov>
Subject: RE: genx documents
Importance: High

Good morning everyone,

Here are all of the final GenX docs in one place. Woohoo!

Britt

From: Jacobs, Brittany
Sent: Thursday, October 21, 2021 3:03 PM
To: Behl, Betsy <Behl.Betsy@epa.gov>
Cc: Euling, Susan <Euling.Susan@epa.gov>; Flaherty, Colleen <Flaherty.Colleen@epa.gov>
Subject: RE: genx documents

Yeah sure, I'm trying to update the acknowledgements in the final assessment right now. I realized we didn't update that from draft to final and we got additional modeling support from ORD in the interim. I asked that Tetra Tech get that back to me tomorrow by noon at the latest. Okay to send then?

From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Thursday, October 21, 2021 2:35 PM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>
Cc: Euling, Susan <Euling.Susan@epa.gov>; Flaherty, Colleen <Flaherty.Colleen@epa.gov>
Subject: genx documents

Brittany, could you send us all the documents that are to be posted on Monday? I d like to have the finals

thx

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 10/25/2021 2:06:14 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: PFAS Science Call with ECOS and ASTHO

Hi Brittany,

Are you available at 4pm? Betsy (or me? Not sure this moment) will be presenting the GenX release high level briefing at this ORD led call. Since it is "science" I think it would be great to have some technical backup.

Thanks,
Sue

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 10/25/2021 2:48:15 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: RE: LIVE GenX!

Do a refresh on your browser.

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Monday, October 25, 2021 10:48 AM
To: Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: LIVE GenX!

Not live for me. Note that Cara walked me through it on Friday and everything looked good then. Will check again once the link works for me.

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Monday, October 25, 2021 10:46 AM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: LIVE GenX!

Live GenX!

Can you check that everything looks good?

Thanks,
Sue

From: Wadlington, Christina <Wadlington.Christina@epa.gov>
Sent: Monday, October 25, 2021 10:38 AM
To: Euling, Susan <Euling.Susan@epa.gov>; Lalley, Cara <Lalley.Cara@epa.gov>; Flaherty, Colleen <Flaherty.Colleen@epa.gov>
Subject: RE: Input needed for PFAS webpage update

These are now live.

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Monday, October 25, 2021 9:19 AM
To: Wadlington, Christina <Wadlington.Christina@epa.gov>; Lalley, Cara <Lalley.Cara@epa.gov>; Flaherty, Colleen <Flaherty.Colleen@epa.gov>
Subject: RE: Input needed for PFAS webpage update

Hi Christina,

Thanks!

Will this be the public link to the final GenX docs?: https://www.epa.gov/chemical-research/human-health-toxicity-assessments-genx-chemicals

I am fixing some slides for Betsy/me and want to make sure we are sharing the correct information.

Thanks,
Sue

From: Wadlington, Christina <Wadlington.Christina@epa.gov>
Sent: Monday, October 25, 2021 9:06 AM
To: Lalley, Cara <Lalley.Cara@epa.gov>; Euling, Susan <Euling.Susan@epa.gov>; Flaherty, Colleen <Flaherty.Colleen@epa.gov>
Subject: RE: Input needed for PFAS webpage update

Alright. It's all set.

Ex. 6 Personal Privacy (PP)

From: Lalley, Cara <Lalley.Cara@epa.gov>
Sent: Monday, October 25, 2021 9:01 AM
To: Wadlington, Christina <Wadlington.Christina@epa.gov>; Euling, Susan <Euling.Susan@epa.gov>; Flaherty, Colleen <Flaherty.Colleen@epa.gov>
Subject: RE: Input needed for PFAS webpage update

Here's the technical fact sheet- 508 compliant. Thanks

From: Wadlington, Christina <Wadlington.Christina@epa.gov>
Sent: Monday, October 25, 2021 9:00 AM
To: Lalley, Cara <Lalley.Cara@epa.gov>; Euling, Susan <Euling.Susan@epa.gov>; Flaherty, Colleen <Flaherty.Colleen@epa.gov>
Subject: RE: Input needed for PFAS webpage update

Ok so the only thing missing is the technical fact sheet?

From: Lalley, Cara <Lalley.Cara@epa.gov>
Sent: Friday, October 22, 2021 3:07 PM
To: Wadlington, Christina <Wadlington.Christina@epa.gov>; Euling, Susan <Euling.Susan@epa.gov>; Flaherty, Colleen <Flaherty.Colleen@epa.gov>
Subject: RE: Input needed for PFAS webpage update

And here is the general public fact sheet.

Now we're cooking with Pam! (OMG- am I the only one old enough to know what that means? 😆)

From: Wadlington, Christina <Wadlington.Christina@epa.gov>
Sent: Friday, October 22, 2021 9:43 AM
To: Euling, Susan <Euling.Susan@epa.gov>; Flaherty, Colleen <Flaherty.Colleen@epa.gov>; Lalley, Cara <Lalley.Cara@epa.gov>
Subject: RE: Input needed for PFAS webpage update

Here are the current links
https://www.epa.gov/chemical-research/human-health-toxicity-assessments-genx-chemicals

Ex. 6 Personal Privacy (PP)

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Friday, October 22, 2021 8:31 AM
To: Flaherty, Colleen <Flaherty.Colleen@epa.gov>; Lalley, Cara <Lalley.Cara@epa.gov>
Cc: Wadlington, Christina <Wadlington.Christina@epa.gov>
Subject: RE: Input needed for PFAS webpage update

Thanks Colleen. Your edits look great.

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Communication Materials

- Fact Sheet: Toxicity Assessment for PFBS (4 pp, 104 K, About PDF)
- Technical Fact Sheet: Toxicity Assessment for PFBS (7 pp, 221 K, About PDF)
- Press Release announced the final Human Health Toxicity Assessment for PFBS (Apr 8, 2021)

Toxicity Assessments

- Final Report & Supporting Materials for the 2021 Human Health Toxicity Assessment for PFBS

Draft Reports & Supporting Materials

- Report & Supporting Materials for the 2018 draft Human Health Toxicity Assessment for PFBS

See comments and revisions below:

From: Flaherty, Colleen <Flaherty.Colleen@epa.gov>
Sent: Friday, October 22, 2021 8:21 AM
To: Lalley, Cara <Lalley.Cara@epa.gov>; Euling, Susan <Euling.Susan@epa.gov>
Cc: Wadlington, Christina <Wadlington.Christina@epa.gov>
Subject: RE: Input needed for PFAS webpage update

See below in blue

From: Lalley, Cara <Lalley.Cara@epa.gov>
Sent: Thursday, October 21, 2021 8:07 PM
To: Euling, Susan <Euling.Susan@epa.gov>
Cc: Wadlington, Christina <Wadlington.Christina@epa.gov>; Flaherty, Colleen <Flaherty.Colleen@epa.gov>
Subject: Input needed for PFAS webpage update

Sue- David wants the URL in the *press release only* to go to this EPA Actions page on the PFAS site (as opposed to the Chemicals Research page where our GenX assessment docs will live). So, we need to help Christina create a new header

and intro bullet for GenX on that page. Teeing off what it says about the PFBS tox assessment, are you ok with this? Feel free to edit-- I understand this is not going out under the same scientific integrity context that PFBS went out.

Ex. 5 Deliberative Process (DP)

Thanks so much!

¸.•´¯`•.¸><((((º> .•´¯`•.><((((º>.•´¯`•.><((((º>.•´¯`•.

Cara Lalley
Communications & Congressional Coordinator
Office of Science & Technology
U.S. EPA Office of Water
Desk: 202-566-0372
Work cell: 202-288-9435

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 10/25/2021 8:53:15 PM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Flaherty, Colleen [Flaherty.Colleen@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]; Albert, Ryan [Albert.Ryan@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: Inside EPA: EPA Sets Strict GenX Risk Values, Weighs Revisiting Other Key PFAS' Risks

EPA Sets Strict GenX Risk Values, Weighs Revisiting Other Key PFAS' Risks

October 25, 2021

EPA's final risk assessment of the per- and polyfluoroalkyl substances (PFAS) known as GenX sets the strictest federal toxicity value yet for a perfluorinated chemical, and says it could revisit less-stringent Obama-era findings for two other key members of the class -- all of which could drive tough new regulations such as drinking water limits.

The final toxicity assessment for hexafluoropropylene oxide (HFPO) dimer acid and its ammonium salt, together known as "GenX Chemicals," is EPA's fourth for a perfluorinated chemical. It comes less than a week after Administrator Michael Regan unveiled a "roadmap" for PFAS action, including what he said would be an aggressive schedule for Integrated Risk Information System (IRIS) assessments that can form the basis for regulation.

"Research establishes a foundation for informed decision making and it is one of the central strategies of EPA's PFAS Roadmap. This science-based final assessment marks a critical step in the process of establishing a national drinking water health advisory for GenX chemicals and provides important information to our partners that can be used to protect communities where these chemicals are found," EPA water chief Radhika Fox, who also serves as co-chair of the agency's senior leadership council on PFAS, said in an Oct. 25 release announcing the assessment.

The document sets a reference dose (RfD) -- the greatest amount EPA estimates an adult can ingest daily over the course of a lifetime without health risks -- at just 3×10^-6 milligrams per kilogram bodyweight per day (mg/kg-day).

That figure is stricter than EPA proposed in 2018 -- a difference a fact sheet says comes from new data developed since 2018, "revised uncertainty factors," and a "state-of-the-art systematic review process." It is also about 10 times more stringent than the RfDs for the two most well-studied PFAS, known as PFOA and PFOS, even though GenX was originally developed as a less toxic, less persistent alternative to PFOA.

But the agency says in supporting materials on the GenX assessment that it is already considering whether to revisit those past findings, which were set in 2016 analyses issued by the water office.

"Based on the 2016 EPA assessments for PFOA and PFOS, the final chronic RfD for GenX chemicals is approximately an order of magnitude (~10 times) lower," EPA's technical summary of the GenX assessment says. "However, EPA is currently reevaluating toxicity information for PFOA and PFOS, and the 2016 RfDs for PFOA and PFOS are subject to change."

New RfDs for the two chemicals could reshape how EPA regulates them under a wide range of laws such as the Toxic Substances Control Act (TSCA), Safe Drinking Water Act (SDWA) and more. RfDs are risk values that can be used with exposure information by the agency's program offices to develop media-specific regulatory benchmarks, such as drinking water advisories of waste site remediation goals, as the technical summary notes.

The summary also notes that the GenX findings are "100 times lower" than those in the agency's third PFAS assessment, of the perfluorinated chemical known as PFBS. That document was initially released by the Trump administration, shortly before the Jan. 20 transition, but was unusual in several respects.

Most prominently, it set a range of RfD values rather than a single figure -- a controversial first for the risk program -- and was not signed by any staff scientists.

Shortly after she joined EPA in an interim role, now-chemicals chief Michal Freedhoff deemed the PFBS assessment tainted by political interference in the scientific process and withdrew it for further review. The agency re-released it on April 8 with a more traditional approach including a single RfD value.

The GenX assessment, which was originally paired with the PFBS assessment and moved through development in unison with that project, also contains a traditional single-point RfD value.

Health Advisories

EPA says in its new assessment that it "plans to develop drinking water health advisories for PFAS chemicals that have final EPA toxicity assessments, including for GenX chemicals and PFBS in Spring 2022," reiterating a commitment included in the PFAS roadmap that Regan released Oct. 18.

The technical summary adds that "[i]n the interim, EPA will work with our state, tribal, and local partners to provide technical assistance as they consider the GenX chemicals RfDs in the context of their exposure scenarios."

Such efforts could focus in large part on North Carolina, where GenX in the Cape Fear River -- a drinking water source for a number of communities -- was first discovered several years ago by a research team from North Carolina State University (NCSU). Since then, the Tar Heel State's environmental agency and Secretaries' Science Advisory Board have kept tabs on EPA's efforts to assess it.

Regan, who came to EPA from the helm of North Carolina's environmental agency, referenced GenX's history in his Oct. 18 remarks at NCSU announcing release of the roadmap, where he hinted that the assessment would arrive soon after.

"There are many other actions in this strategy, including a final toxicity assessment for GenX that we're issuing in the coming days, which will help us ensure that no other community has to go through what the Cape Fear River communities had to endure," Regan said. -- *Maria Hegstad* (mhegstad@iwpnews.com)

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 10/25/2021 3:00:14 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: RE: LIVE GenX!

OK thanks.

Sue

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Monday, October 25, 2021 10:54 AM
To: Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: LIVE GenX!

That fixed it. Spent a few minutes reading through it, looks okay.

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Monday, October 25, 2021 10:51 AM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: LIVE GenX!

Yes, however, this am Colleen found a lack of a "GenX chemical" needing an "s"

I am checking now too.

Good to have all eyes on this.

Thanks,
Sue

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Monday, October 25, 2021 10:48 AM
To: Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: LIVE GenX!

Not live for me. Note that Cara walked me through it on Friday and everything looked good then. Will check again once the link works for me.

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Monday, October 25, 2021 10:46 AM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: LIVE GenX!

Live GenX!

Can you check that everything looks good?

Thanks,

Sue

From: Wadlington, Christina <Wadlington.Christina@epa.gov>
Sent: Monday, October 25, 2021 10:38 AM
To: Euling, Susan <Euling.Susan@epa.gov>; Lalley, Cara <Lalley.Cara@epa.gov>; Flaherty, Colleen <Flaherty.Colleen@epa.gov>
Subject: RE: Input needed for PFAS webpage update

These are now live.

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Monday, October 25, 2021 9:19 AM
To: Wadlington, Christina <Wadlington.Christina@epa.gov>; Lalley, Cara <Lalley.Cara@epa.gov>; Flaherty, Colleen <Flaherty.Colleen@epa.gov>
Subject: RE: Input needed for PFAS webpage update

Hi Christina,

Thanks!

Will this be the public link to the final GenX docs?: https://www.epa.gov/chemical-research/human-health-toxicity-assessments-genx-chemicals

I am fixing some slides for Betsy/me and want to make sure we are sharing the correct information.

Thanks,
Sue

From: Wadlington, Christina <Wadlington.Christina@epa.gov>
Sent: Monday, October 25, 2021 9:06 AM
To: Lalley, Cara <Lalley.Cara@epa.gov>; Euling, Susan <Euling.Susan@epa.gov>; Flaherty, Colleen <Flaherty.Colleen@epa.gov>
Subject: RE: Input needed for PFAS webpage update

Alright. It's all set.

Ex. 6 Personal Privacy (PP)

From: Lalley, Cara <Lalley.Cara@epa.gov>
Sent: Monday, October 25, 2021 9:01 AM
To: Wadlington, Christina <Wadlington.Christina@epa.gov>; Euling, Susan <Euling.Susan@epa.gov>; Flaherty, Colleen <Flaherty.Colleen@epa.gov>
Subject: RE: Input needed for PFAS webpage update

Here's the technical fact sheet- 508 compliant. Thanks

From: Wadlington, Christina <Wadlington.Christina@epa.gov>
Sent: Monday, October 25, 2021 9:00 AM
To: Lalley, Cara <Lalley.Cara@epa.gov>; Euling, Susan <Euling.Susan@epa.gov>; Flaherty, Colleen

<Flaherty.Colleen@epa.gov>
Subject: RE: Input needed for PFAS webpage update

Ok so the only thing missing is the technical fact sheet?

From: Lalley, Cara <Lalley.Cara@epa.gov>
Sent: Friday, October 22, 2021 3:07 PM
To: Wadlington, Christina <Wadlington.Christina@epa.gov>; Euling, Susan <Euling.Susan@epa.gov>; Flaherty, Colleen <Flaherty.Colleen@epa.gov>
Subject: RE: Input needed for PFAS webpage update

And here is the general public fact sheet.

Now we're cooking with Pam! (OMG- am I the only one old enough to know what that means? 😉)

From: Wadlington, Christina <Wadlington.Christina@epa.gov>
Sent: Friday, October 22, 2021 9:43 AM
To: Euling, Susan <Euling.Susan@epa.gov>; Flaherty, Colleen <Flaherty.Colleen@epa.gov>; Lalley, Cara <Lalley.Cara@epa.gov>
Subject: RE: Input needed for PFAS webpage update

Here are the current links
https://www.epa.gov/chemical-research/human-health-toxicity-assessments-genx-chemicals

Ex. 6 Personal Privacy (PP)

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Friday, October 22, 2021 8:31 AM
To: Flaherty, Colleen <Flaherty.Colleen@epa.gov>; Lalley, Cara <Lalley.Cara@epa.gov>
Cc: Wadlington, Christina <Wadlington.Christina@epa.gov>
Subject: RE: Input needed for PFAS webpage update

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To: Lalley, Cara <Lalley.Cara@epa.gov>; Euling, Susan <Euling.Susan@epa.gov>
Cc: Wadlington, Christina <Wadlington.Christina@epa.gov>
Subject: RE: Input needed for PFAS webpage update

See below in blue

From: Lalley, Cara <Lalley.Cara@epa.gov>
Sent: Thursday, October 21, 2021 8:07 PM
To: Euling, Susan <Euling.Susan@epa.gov>
Cc: Wadlington, Christina <Wadlington.Christina@epa.gov>; Flaherty, Colleen <Flaherty.Colleen@epa.gov>
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Cara Lalley
Communications & Congressional Coordinator
Office of Science & Technology
U.S. EPA Office of Water
Desk: 202-566-0372
Work cell: 202- Ex. 6 Personal Privacy (PP)

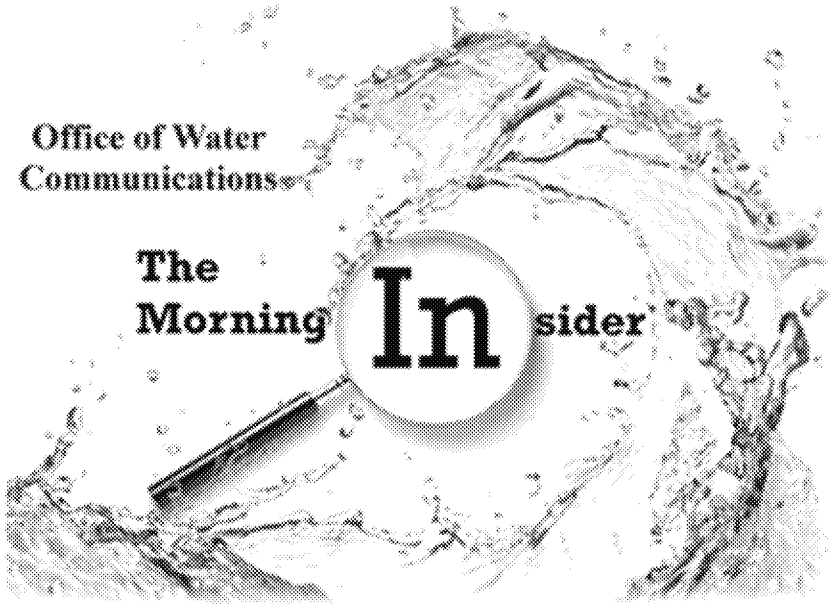
Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 10/26/2021 12:57:55 PM
To: Miller, GregoryG [Miller.Gregory@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: FW: OW- The Morning Insider

From: Nagle, Deborah <Nagle.Deborah@epa.gov>
Sent: Tuesday, October 26, 2021 8:48 AM
To: Behl, Betsy <Behl.Betsy@epa.gov>; Euling, Susan <Euling.Susan@epa.gov>; Flaherty, Colleen <Flaherty.Colleen@epa.gov>
Subject: FW: OW- The Morning Insider

Press on GenX chemicals

From: Fuld, John <Fuld.John@epa.gov>
Sent: Tuesday, October 26, 2021 8:45 AM
To: Aguirre, Janita <Aguirre.Janita@epa.gov>; Balasa, Kate <balasa.kate@epa.gov>; Best-Wong, Benita <Best-Wong.Benita@epa.gov>; Brandt, Peter <Brandt.Peter@epa.gov>; Bravo, Antonio <Bravo.Antonio@epa.gov>; Cisar, Elizabeth <Cisar.Elizabeth@epa.gov>; Connors, Sandra <Connors.Sandra@epa.gov>; Cooper, Tiffany <Cooper.Tiffany@epa.gov>; Corona, Joel <Corona.Joel@epa.gov>; Corr, Elizabeth <Corr.Elizabeth@epa.gov>; Fox, Radhika <Fox.Radhika@epa.gov>; Gilbertson, Sue <gilbertson.sue@epa.gov>; Goodin, John <Goodin.John@epa.gov>; Guilaran, Yu-Ting <Guilaran.Yu-Ting@epa.gov>; Lalley, Cara <Lalley.Cara@epa.gov>; Lippert, Allison <lippert.allison@epa.gov>; Lousberg, Macara <Lousberg.Macara@epa.gov>; Mathews, Cheyenne <Mathews.Cheyenne@epa.gov>; McLain, Jennifer L. <McLain.Jennifer@epa.gov>; Miller, Wynne <Miller.Wynne@epa.gov>; Nagle, Deborah <Nagle.Deborah@epa.gov>; Nguyen, Amelia <nguyen.amelia@epa.gov>; PerezSullivan, Margot <PerezSullivan.Margot@epa.gov>; Quast, Sylvia <Quast.Sylvia@epa.gov>; Risley, David <Risley.David@epa.gov>; Sawyers, Andrew <Sawyers.Andrew@epa.gov>; Schafer, Zach <Schafer.Zach@epa.gov>; Schollhamer, Mary <Schollhamer.Mary@epa.gov>; Spraul, Greg <Spraul.Greg@epa.gov>; Sylvester, Frank <Sylvester.Frank.J@epa.gov>; Vazquez, Sharon <Vazquez.Sharon@epa.gov>; Wadlington, Christina <Wadlington.Christina@epa.gov>; Wirth, Karen <Wirth.Karen@epa.gov>
Subject: OW- The Morning Insider



October 26, 2021

NEWS

Politico Pro: Shorter, but Maybe Not Safer

GenX chemicals, one of the primary shorter-chain PFAS the chemicals industry turned to after agreeing to phase out the use of longer-chain chemicals like PFOA and PFOS, may not be that much safer itself, EPA said formally on Monday.

Politico Pro: Water Rules

A federal judge shot down a Trump-era rule that limited states' ability to block energy infrastructure under the Clean Water Act.

E&E News: EPA deems 'forever chemical' haunting N.C. toxic to humans

Hot off the heels of releasing its PFAS road map last week, EPA has found that a deeply controversial "forever chemical" that has contaminated drinking water in North Carolina is, indeed, toxic to humans and will be subject to a drinking water advisory.

QUOTED: Radhika Fox

E&E News: Court strikes down Trump EPA water permitting rule

A federal judge on Friday struck down a Trump-era regulation that limited the ability of states and Native American tribes to regulate water pollution.

Inside EPA: EPA Sets Strict GenX Risk Values, Weighs Revisiting Other Key PFAS' Risks

EPA's final risk assessment of the per- and polyfluoroalkyl substances (PFAS) known as GenX sets the strictest federal toxicity value yet for a perfluorinated chemical and says it could revisit less-stringent Obama-era findings for two other key members of the class -- all of which could drive tough new regulations such as drinking water limits.

Inside EPA: Ruling Vacating Trump-Era CWA Section 401 Rule Faces Industry Appeal
Hydropower producers are vowing to appeal a federal district judge's vacatur of a Trump-era Clean Water Act (CWA) rule that narrowed states' authority when determining whether federal permits or licenses comply with state water quality standards, saying the rule is necessary to meet President Joe Biden's clean energy goals.

Bloomberg Law: EPA Declares GenX Most Toxic of 'Forever Chemicals' Quartet
GenX chemicals are the most hazardous of any of four "forever chemicals" reviewed by the EPA, according to final agency analyses released Monday.

FULL ARTICLE

Politico Pro: Shorter, but Maybe Not Safer
GenX chemicals, one of the primary shorter-chain PFAS the chemicals industry turned to after agreeing to phase out the use of longer-chain chemicals like PFOA and PFOS, may not be that much safer itself, EPA said formally on Monday. The final toxicity assessment released by EPA set a "reference dose" — the amount of the chemical a person can ingest daily over their lifetime without adverse health effects — that is 25 times lower than the draft assessment EPA produced in 2018, and lower even than what EPA has said is a safe threshold for PFOA and PFOS (although the agency, noted that it is reevaluating the science behind those other assessments and could ratchet them down as well).

The new assessment will be used to craft the drinking water health advisory for GenX that the Biden administration promised as part of its new PFAS strategy last week. The chemical has turned up in a number of drinking water sources, including those of some 200,000 North Carolinians when EPA Administrator Michael Regan was the state's top environmental official.

EPA's inspector general also announced Monday that it's probing the Trump administration's changes to a rule meant to effectively ban certain harmful PFAS. That will focus namely on the inclusion of new loopholes and the deletion of language clarifying that EPA didn't need a time-consuming analysis to exert its authority to regulate the toxic chemicals. Annie Snider has more for Pros.

Politico Pro: Water Rules
A federal judge shot down a Trump-era rule that limited states' ability to block energy infrastructure under the Clean Water Act. Though the Biden administration had raised concerns with the rule, it hadn't requested the court to shoot it down, asking instead for it to send the rule back for review and reconsideration. But U.S. District Court Judge William Alsup for the Northern District of California agreed with several states and other groups that the rule had substantial flaws that EPA itself had pointed out, prompting him to vacate it.

The 2020 rule was put together after Democratic states tried to use the Clean Water Act to stop energy projects like pipelines and coal export terminals over concerns including climate change. Annie has more for Pros.

E&E News: EPA deems 'forever chemical' haunting N.C. toxic to humans

Hot off the heels of releasing its PFAS road map last week, EPA has found that a deeply controversial "forever chemical" that has contaminated drinking water in North Carolina is, indeed, toxic to humans and will be subject to a drinking water advisory.

The long-awaited toxicity assessment for GenX marks a key step in the Biden administration's approach to tackling public health and environmental problems tied to chemicals known as per-and polyfluoroalkyl substances.

GenX has been linked to liver and blood problems, as well as certain types of cancer. People are exposed to the compound through drinking water, most notoriously in North Carolina, with 350,000 people served water contaminated with GenX.

That national crisis helped catapult current EPA Administrator Michael Regan into the spotlight when, as the former head of North Carolina's environmental department, he faced off against GenX manufacturer Chemours Co., resulting in a massive consent decree.

EPA has been pushed to regulate the chemical in drinking water, with many citing links to an increase in cancer and other diseases. Regan has meanwhile cited his experience with the compound as North Carolina's top environmental regulator as a motivation for taking swift federal action on PFAS more broadly (*Greenwire,* July 21).

EPA Assistant Administrator for Water Radhika Fox said the GenX toxicity assessment "establishes a foundation for informed decision making" in the form of a drinking water advisory. She added the document is a key component of the agency's road map for addressing PFAS overall.

"This science-based final assessment marks a critical step in the process of establishing a national drinking water health advisory for GenX chemicals and provides important information to our partners that can be used to protect communities where these chemicals are found," Fox said.

Toxicity assessments are useful tools in protecting public health because they set "reference doses" for chemicals estimating how much a person can safely ingest daily over their lifetime without having adverse health impacts. The next step for EPA will be to combine the toxicity assessment with an analysis of how people are exposed to the same chemical from different sources in order to determine what levels of a chemical are safe in different mediums of exposure, such as drinking water or food, and which groups — such as pregnant people, infants, breastfeeding people — are most vulnerable to GenX exposure. The agency will then combine those three analyses in a drinking water advisory.

The new assessment sets chronic and subchronic reference doses for GenX at 3 parts per trillion per day and 30 ppt per day, respectively. That's much lower than EPA's 2018 draft toxicity assessment for the compound, which set chronic and subchronic reference doses at 80 ppt and 200 ppt per day, respectively.

EPA attributes the lower doses in the final toxicity assessment to new research on GenX's health impacts that has been published in intervening years. The agency is not alleging any political interference by the Trump administration in the GenX assessment, though the Biden administration has blamed its predecessor for underestimating the toxicity of other PFAS compounds.

Betsy Southerland, a former top scientist in EPA's Office of Water, said the new document was a solid start for developing a drinking water advisory.

"I have full confidence that this is rigorously derived science," she said

The announcement comes on the heels of EPA's PFAS road map, unveiled last week after months of anticipation. That sweeping vision for tackling the chemicals will see offices across the agency working together on a crackdown, including drinking water regulations for PFOA and PFOS, the two most researched chemicals, as well as hazardous substance designation for those two compounds under Superfund law. A massive national testing strategy is also underway as EPA mulls further regulations (*Greenwire*, Oct. 18).

But EPA has already faced criticism over the plan, given the agency's failure to commit to what advocates have long pushed for: class-based regulation. Many impacted communities have expressed concern that they will be overlooked, particularly given the regulatory community's bigger focus on long-chain PFAS, rather than their short-chain replacements like GenX.

Industry members have cited studies showing short-chain PFAS appear to linger for reduced periods in the body, lessening their threat to human health. Critics say that doesn't change the impact short-chain chemicals have had in their communities.

As part of its announcement, EPA also said it would revisit the 2016 reference doses for PFOA and PFOS, which have long come under fire from critics who say they are not strict enough. Melanie Benesh, an attorney with the Environmental Working Group, called that move "welcome news" and noted the values will be the basis for EPA's proposed drinking water limits for those chemicals, expected this coming spring.

In a separate statement, Benesh said the toxicity values marked an "important step" but that EPA must do more for communities.

"The EPA should use this toxicity value to require polluters to report all GenX releases, create enforceable limits on GenX emissions, get GenX out of drinking water, and require cleanup of GenX at contaminated sites," she said.

Hometown ties:

The announcement marks a major arc for Regan, who rose to national prominence tackling environmental issues, including the GenX crisis. Local North Carolina groups have consistently hoped the EPA chief will take a particular interest in their struggles, even as they have criticized the agency for not moving fast enough.

GenX — a trade name for a processing aid technology designed to replace PFOA — is among the most controversial short-chain PFAS due to the havoc the compound has caused in North Carolina. That contamination has spurred massive litigation and led to ongoing health fears for communities. Local advocates said this morning that they had not yet had time to review the toxicity assessment but appeared hopeful that regulation might be coming.

Last week, some of those groups put out a response to the PFAS road map welcoming certain elements but arguing more is needed. Several were invited to the agency's road map announcement, but expressed dismay that EPA still has not granted a petition that would require Chemours to provide health and environmental data on more than 50 PFAS.

Dana Sargent, who leads the group Cape Fear River Watch, said at the time she was "grateful" for EPA's announcement but expressed hope "that the Administration will require this testing specifically for communities such as ours — which have been contaminated by a toxic mix of PFAS for decades."

Thom Sueta, a spokesperson for Chemours, said the company is still in the process of reviewing "the significant body of technical information" present in the assessment. He said Chemours is looking in particular for insight into the new review process used by EPA, "including the application of revised uncertainty factors to reflect greater uncertainty" since the 2018 draft assessment.
"We are unaware of data that would support the conclusions drawn by the agency," Sueta said.
Despite misgivings from local groups, Regan has emphasized repairing trust with impacted communities in his comments about PFAS. He has billed the issue a "top priority" since taking over the agency, and in his announcement last week, the administrator appealed to communities like those in North Carolina (*E&E News PM*, Oct. 18).

"I've heard you, we've learned from you, and we are learning from your experience," Regan told an audience gathered in his home state as he announced the PFAS road map.

Emily Donovan, co-founder of the group Clean Cape Fear, said that on its face EPA's announcement was "validating" after years of fighting for acknowledgment. She also emphasized that the findings should put more pressure on the agency to address PFAS across the board, rather than in smaller groups.

"GenX was supposed to be the 'less toxic' alternative to PFOA," Donovan said. "I think this is a loud and clear reminder we need to regulate PFAS as a class."

E&E News: Court strikes down Trump EPA water permitting rule
A federal judge on Friday struck down a Trump-era regulation that limited the ability of states and Native American tribes to regulate water pollution.

For nearly half a century, EPA had largely given states and tribes the authority to review and certify Clean Water Act permits for federally approved projects like dams and pipelines that discharge pollution within their boundaries.

The Trump administration contended that the provision hamstrung energy development and last year issued a new rule that shortened the timeline for states' and tribes' review and barred them from considering conditions like climate change that are not directly related to water quality.

In his Friday ruling, Judge William Alsup of the U.S. District Court for the Northern District of California struck down the Trump EPA's approach, saying that it runs counter to Supreme Court precedent and that the agency provided little justification for the change.

"EPA does not adequately explain … how it could so radically depart from what the Supreme Court dubbed the most reasonable interpretation of the statute," he wrote.

The judge cited the Supreme Court's 1994 ruling in *Public Utility District No. 1 of Jefferson County v. Washington Department of Ecology*, which said states could require hydropower permits to preserve minimum stream flows, an issue that is not directly addressed in the Clean Water Act (*Greenwire*, June 2, 2020).

The Trump rule was particularly significant in the Pacific Northwest, where Washington state was seeking to use the relevant Clean Water Act provision, Section 401, to set more stringent standards for severely endangered salmon and steelhead runs — including temperature standards in the Columbia River basin (*Greenwire*, June 30).

Consequently, groups like Columbia Riverkeeper sued to block the Trump rule, with the backing of regional tribes, including the Pyramid Lake Paiute Tribe.

The Biden administration was put in a difficult position by the regulation. Biden's EPA has said it will redo the regulation, targeting spring 2023 for a new rule. But it argued that the court should not throw out the Trump rule while it drafts the new regulation.

Alsup, a Clinton appointee, was not persuaded by that reasoning, and he pointed to potential environmental harms to salmon and steelhead while Biden's EPA works on the new rule.

"[T]he scope of potential revisions EPA is considering," he wrote, "supports vacatur of the current rule because the agency has demonstrated that it will not or could not adopt the same rule upon remand."

Biden's EPA has been critical of former President Trump's approach, saying it "erodes state and Tribal authority." It has sought to take a surgical approach to redoing the rule, including potentially giving states and tribes more time to review permit applications and certify them before that authority is "waived" and falls to EPA.

But that has earned pushback from Republicans who have sought to narrow the permitting process (*Greenwire*, Aug. 20).

Pyramid Lake Paiute Tribal Chair Janet Davis applauded the ruling.

"We now look forward," she said in a statement, "to working with EPA to enact regulations that respect the tribes' and states' authority to protect water quality and prevent water pollution."

The ruling comes as there has been increased attention on the Columbia River basin and its rapidly declining salmon runs.

Also last week, the Biden administration asked a court to hit pause on litigation over the management of 14 controversial hydropower dams as it crafts a new management plan.

Inside EPA: EPA Sets Strict GenX Risk Values, Weighs Revisiting Other Key PFAS' Risks

EPA's final risk assessment of the per- and polyfluoroalkyl substances (PFAS) known as GenX sets the strictest federal toxicity value yet for a perfluorinated chemical, and says it could revisit less-stringent Obama-era findings for two other key members of the class -- all of which could drive tough new regulations such as drinking water limits.

The final toxicity assessment for hexafluoropropylene oxide (HFPO) dimer acid and its ammonium salt, together known as "GenX Chemicals," is EPA's fourth for a perfluorinated chemical. It comes less than a week after Administrator Michael Regan **unveiled a "roadmap"** for PFAS action, including what he said would be an aggressive schedule for Integrated Risk Information System (IRIS) assessments that can form the basis for regulation.

"Research establishes a foundation for informed decision making and it is one of the central strategies of EPA's PFAS Roadmap. This science-based final assessment marks a critical step in the process of establishing a national drinking water health advisory for GenX chemicals and provides important information to our partners that can be used to protect communities where these chemicals are found," EPA water chief Radhika Fox, who also serves as co-chair of the agency's senior leadership council on PFAS, said in an Oct. 25 release announcing the assessment.

The document sets a reference dose (RfD) -- the greatest amount EPA estimates an adult can ingest daily over the course of a lifetime without health risks -- at just 3×10^{-6} milligrams per kilogram bodyweight per day (mg/kg-day).

That figure is stricter than EPA proposed in 2018 -- a difference **a fact sheet** says comes from new data developed since 2018, "revised uncertainty factors," and a "state-of-the-art systematic review process." It is also about 10 times more stringent than the RfDs for the two most well-studied PFAS, known as PFOA and PFOS, even though GenX was originally developed as a less toxic, less persistent alternative to PFOA.

But the agency says in supporting materials on the GenX assessment that it is already considering whether to revisit those past findings, which were set in 2016 analyses issued by the water office.

"Based on the 2016 EPA assessments for PFOA and PFOS, the final chronic RfD for GenX chemicals is approximately an order of magnitude (~10 times) lower," **EPA's technical summary** of the GenX assessment says. "However, EPA is currently reevaluating toxicity information for PFOA and PFOS, and the 2016 RfDs for PFOA and PFOS are subject to change."

New RfDs for the two chemicals could reshape how EPA regulates them under a wide range of laws such as the Toxic Substances Control Act (TSCA), Safe Drinking Water Act (SDWA) and more. RfDs are risk values that can be used with exposure information by the agency's program offices to develop media-specific regulatory benchmarks, such as drinking water advisories of waste site remediation goals, as the technical summary notes.

The summary also notes that the GenX findings are "100 times lower" than those in the agency's third PFAS assessment, of the perfluorinated chemical known as PFBS. That document was initially released by the Trump administration, shortly before the Jan. 20 transition, but was unusual in several respects.

Most prominently, it set a range of RfD values rather than a single figure -- a controversial first for the risk program -- and was not signed by any staff scientists.

Shortly after she joined EPA in an interim role, now-chemicals chief Michal Freedhoff deemed the PFBS assessment tainted by political interference in the scientific process and withdrew it for further review. The agency re-released it on April 8 with a more traditional approach including a single RfD value.

The GenX assessment, which was originally paired with the PFBS assessment and moved through development in unison with that project, also contains a traditional single-point RfD value.

Health Advisories

EPA says in its new assessment that it "plans to develop drinking water health advisories for PFAS chemicals that have final EPA toxicity assessments, including for GenX chemicals and PFBS in Spring 2022," reiterating a commitment included in the PFAS roadmap that Regan released Oct. 18.

The technical summary adds that "[i]n the interim, EPA will work with our state, tribal, and local partners to provide technical assistance as they consider the GenX chemicals RfDs in the context of their exposure scenarios."

Such efforts could focus in large part on North Carolina, where GenX in the Cape Fear River -- a drinking water source for a number of communities -- was first discovered several years ago by a research team from North Carolina State University (NCSU). Since then, the Tar Heel State's environmental agency and Secretaries' Science Advisory Board have kept tabs on EPA's efforts to assess it.

Regan, who came to EPA from the helm of North Carolina's environmental agency, referenced GenX's history in his Oct. 18 remarks at NCSU announcing release of the roadmap, where he hinted that the assessment would arrive soon after.

"There are many other actions in this strategy, including a final toxicity assessment for GenX that we're issuing in the coming days, which will help us ensure that no other community has to go through what the Cape Fear River communities had to endure," Regan said.

Inside EPA: Ruling Vacating Trump-Era CWA Section 401 Rule Faces Industry Appeal

Hydropower producers are vowing to appeal a federal district judge's vacatur of a Trump-era Clean Water Act (CWA) rule that narrowed states' authority when determining whether federal permits or licenses comply with state water quality standards, saying the rule is necessary to meet President Joe Biden's clean energy goals.

"The decision to vacate this rule without even hearing arguments on the merits not only undermines the President's clean energy goals, but it cuts against transparency and public participation in the judicial system," National Hydropower Association (NHA) spokesman LeRoy Coleman tells *Inside EPA*. "We're disappointed in the outcome, and will be appealing the decision, as our commitment to combating climate change with clean hydropower is unwavering."

The Interstate Natural Gas Association of America (INGAA), which like NHA was an intervenor-defendant in the litigation, declined to comment on the ruling. The American Petroleum Institute (API), which was a joint intervenor-defendant with INGAA, responded to questions from *Inside EPA* about the ruling by pointing to Aug. 2 comments to EPA opposing the agency's plans announced earlier this year to revamp the rule.

The hydropower group's plan comes in response to last week's ruling from Judge William Alsup of the U.S. District Court for the Northern District of California, who vacated the CWA section 401 rule and remanded it back to EPA, saying the agency and intervenor defendants, including Republican state attorneys general, NHA, and natural gas and oil pipeline groups, had failed to persuade him that he lacked the authority to vacate it.

In his Oct. 21 ruling in *In re: Clean Water Act Rulemaking*, Alsup said EPA's "recognition of its inconsistent interpretation of the scope of the certification compels the conclusion that the current rule is unreasonable," and he added that his "order harbors significant doubts that EPA correctly promulgated the certification rule due to the apparent arbitrary and capricious changes to the rule's scope."

EPA on its website says it is in receipt of Alsup's ruling and notes, "As the court stated, this order requires a temporary return to EPA's 1971 rule until EPA finalizes a new certification rule. EPA is reviewing the court decision and considering next steps."

The ruling appears likely to ease the Biden EPA's ability to rewrite the rule, especially portions that took a novel interpretation of Supreme Court precedent on whether water quality certifications must be limited only to discharges.
EPA officials announced in May that they plan to issue a new CWA section 401 water quality certification rule after identifying "substantial concerns with a number of provisions of the 401 Certification Rule that relate to cooperative federalism principles and CWA Section 401's goal of ensuring that states are empowered to protect their water quality."

In court filings, EPA said it expects to propose a revised rule in spring 2022 and sign a final rule in spring 2023. Van Ness Feldman, a law firm that frequently represents energy industry clients, says in an Oct. 25 client alert that the ruling will, for now, limit industry's ability to challenge state certifications. "At least until Spring 2023, Section 401 water quality certifications will be based on the 1971 Rule. As a result, certifications will likely be less susceptible to challenge as in excess of state authority under Section 401 of the Clean Water Act than if the 2020 Certification Rule had been allowed to remain in effect," lawyers at the firm wrote in their alert.

The 2020 EPA rule stemmed from a President Donald Trump executive order that aimed to speed the permitting of natural gas and other energy projects following denials by New York and Washington state of water quality certifications to construct natural gas pipelines and a coal export terminal, respectively.

In promulgating the rule, then-EPA Administrator Andrew Wheeler said that while many states comply with the water law, some states do not and have been "trapping projects in a bureaucratic Groundhog Day" to prevent them from moving forward by raising concerns about climate change and other non-water quality issues.

Vacatur's Impacts

Under section 401, states are generally authorized to review any proposed activity that requires a federal license or permit and may result in a discharge to ensure compliance with appropriate state water quality requirements. These actions include CWA section 402 discharge permits in states where EPA administers the permitting program, CWA section 404 permits issued by the Army Corps of Engineers, hydropower and pipeline licenses issued by the Federal

Energy Regulatory Commission (FERC), and Rivers and Harbors Act sections 9 and 10 permits issued by the Corps.

Among other things, the 2020 rule removed the ability for states to reset the clock on the one-year statutory deadline for states to issue their certification decisions. The rule relied in large part on a 2019 ruling from the U.S. Court of Appeals for the District of Columbia Circuit in *Hoopa Valley Tribe v. FERC*, which said the CWA does not allow operators to avoid the one-year time frame by withdrawing and re-submitting their applications before the deadline arrives.

The 2nd Circuit has also backed this finding, but the 4th Circuit earlier this year issued a ruling that creates some leeway for applicants for federal licensees to avoid rejection of Section 401 certification applications where the state agency threatens to reject an application because the one-year clock is running out, increasing uncertainty over the issue.

While Alsup's ruling marks the second Trump-era CWA rule district courts have vacated, it is unclear whether the impacts of vacatur here will be as widespread, and potentially as confusing, as the vacatur of the 2020 definition of "waters of the United States" (WOTUS).

In the case of WOTUS, the Supreme Court has failed to provide a clear test of the limits of the water law's reach, prompting Republican and Democratic administrations to make vastly different attempts to provide clarity. But both the Obama-era definition and the Trump-era definition were challenged in numerous district courts by a variety of plaintiffs, including property rights advocates, environmentalists, states, and scores of agriculture and industry groups.

But with the 401 rule, the 2020 regulation was the first time EPA's regulations for how states should conduct water quality certification reviews under the CWA had been updated since 1971, and the rule marked a clear break with Supreme Court precedent, which has found that states have broad authority on how they conduct section 401 reviews.

The 2020 CWA 401 rule was challenged in only three district courts, and while the plaintiffs in the 401 litigation are similar to those who challenged the Trump-era WOTUS definition, the industry intervenors were only NHA, API, and INGAA.

The industry intervenors and seven Republican state attorneys general who also intervened to support the 2020 CWA 401 rule argued that vacatur would cause significant problems.

But the judge rejected those arguments, saying that "the whipsawing intervenor defendants would ascribe to vacatur clearly arose from EPA's promulgation of a revised certification rule that dramatically broke with fifty years of precedent, and subsequent complete course reversal by the agency less than nine months later."

Hydropower Projects

Among his reasons for vacating the rule, Alsup said he found Washington state's example concerning three hydropower dams on the Skagit River particularly persuasive as to the potential environmental harms.

"These dams will each require Section 401 certifications prior to EPA's promulgation of a replacement for the current certification rule. As noted in the State of Washington's brief, 'because FERC licenses for dams will last between 30-50 years, the lack of adequate water quality conditions attached to these licenses will have adverse impacts for a *generation*,'" Alsup writes.

But NHA's Coleman argues that relicensing hydropower dams without delay is critical to providing the nation with "the clean, renewable, and flexible electricity provided by hydropower."

"To get there, we need a comprehensive licensing process that achieves more timely outcomes while preserving environmental protections and state priorities," Coleman says. He adds that with nearly 30 percent of existing hydropower licenses set to expire by 2030, representing 13 gigawatts carbon-free energy, it is imperative to preserve the fleet by ensuring certification requests as part of relicensing are decided within a reasonable time.

Coleman says hydropower projects often languish for years awaiting a state decision on the water certification, sometimes a decade or more, and the 2020 rule provided "much needed timeliness and certainty to water quality certification for hydropower licenses by enhancing coordination between federal and state review and ensuring that certification requests are acted upon within a reasonable period of time."

Bloomberg Law: EPA Declares GenX Most Toxic of 'Forever Chemicals' Quartet

GenX chemicals are the most hazardous of any of four "forever chemicals" reviewed by the EPA, according to final agency analyses released Monday.

The Environmental Protection Agency published its final human health toxicity assessment for hexafluoropropylene oxide (HFPO) dimer acid and its ammonium salt, commonly referred to as "GenX chemicals."

The amount of GenX that people could ingest daily over their lifetime without expected harm is significantly less—0.000003 milligrams per kilogram bodyweight per day—than the concentration the EPA has set for three other per- and polyfluoroalkyl substances, or PFAS, reviewed since 2016.

"We are unaware of data that would support the conclusions drawn by the agency," the Chemours Co., which has produced GenX said in a statement.

The EPA's Office of Water will use the GenX assessment to develop a national drinking water health advisory for GenX chemicals by next spring, the agency said. Completing Monday's GenX assessment and the drinking water advisory were among many commitments the agency made in a PFAS roadmap released Oct. 18.

Health advisories are non-enforceable, yet they drive local and state policies, Steve Via, the director of federal relations for the American Water Works Association, said in a recent interview. That puts water utilities in a challenging position, he said, because advisories don't include cost-benefit, best available technology, or other analyses that water standards have.

Subject of Litigation

GenX is a trade name for a processing aid technology E.I. du Pont de Nemours, Inc., and its later spinoff, Chemours, used to make specialized chemicals called fluoropolymers without another hazardous chemical, perfluorooctanoic acid (PFOA).

Chemours said it's reviewing the EPA's extensive technical analysis released on Monday to understand the changes the agency made since a 2018 draft assessment, which concluded higher exposures to the chemical would be unlikely to harm.

North Carolina has sued both companies, most recently on Oct. 13, when its attorney generalalleged the companies kept discharging GenX and other PFAS even though they knew they posed health and environmental risks.

Companies use fluoropolymers manufactured with GenX and other PFAS to produce thousands of industrial and consumer products. PFAS give these goods special electrical properties and help them resist water, oil, heat, and corrosion.

The EPA said it "does not have specific information from manufacturers on which commercial products rely on GenX chemicals as a processing aid." GenX chemicals have been found in surface water, groundwater, drinking water, rainwater, and air emissions, it said.

Updates, New Analyses Coming

EPA's research office develops toxicity assessments to detail health problems posed by chemicals and potentially hazardous amounts. Types of decisions it and state regulatory offices make with these and other information include whether a chemical needs restricting, whether to set water limits, and whether to clean up sites.

New toxicity data prompted the final GenX assessment to set a lower daily amount, called a reference dose, than the EPA proposed in 2018 as being unlikely to harm, the agency said.

The agency said it's reevaluating toxicity information for the PFOA and perfluorooctane sulfate (PFOS) assessments completed in 2016, which could alter their reference doses. It's also developing new health assessments for five more PFAS that states and federal agencies are detecting in their water supplies: perfluorodecanoic acid (PFDA), perfluorononanoic acid (PFNA), perfluorohexanoic acid (PFHxA), perfluorohexanesulfonic acid (PFHxS), and perfluorobutanoic acid (PFBA).

PFAS got their "forever chemicals" moniker because, although their chemical compositions vary, one common characteristic is that they break down very slowly and can accumulate over time in people, animals, and the environment, the EPA said.

The agency approved the manufacture of GenX chemicals, believing they had a better health and environmental profile than the PFOA for which they'd substituted. They don't appear to build up as much in people, as older chemicals like PFOA and PFOS, but GenX move more easily in the environment leading to potential exposures further away, the EPA said.

John W. Fuld, Ph.D.
U.S. Media Relations Manager, Office of Water
U.S. Environmental Protection Agency
Washington DC
Office: 202-564-8847
Call: 202-815-6408
Fuld.john@epa.gov

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Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 10/26/2021 12:38:45 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: FW: Scheduling FSTRAC meeting on release of Final Toxicity Assessment for GenX Chemicals

Hi Brittany,

Please let Shamima know the total time for the talk and for Q&A. And your schedule preference.

Thanks,
Sue

From: Akhter, Shamima <Akhter.Shamima@epa.gov>
Sent: Tuesday, October 26, 2021 8:38 AM
To: Euling, Susan <Euling.Susan@epa.gov>
Cc: Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: RE: Scheduling FSTRAC meeting on release of Final Toxicity Assessment for GenX Chemicals

Thank you Sue!

I'll add all information and send a draft version sometime today for you to take a look.

Shamima

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Tuesday, October 26, 2021 8:30 AM
To: Akhter, Shamima <Akhter.Shamima@epa.gov>
Cc: Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: RE: Scheduling FSTRAC meeting on release of Final Toxicity Assessment for GenX Chemicals

Hi Shamima,

Here you go:

On October 25th, the U.S. Environmental Protection Agency (EPA) released the final human health toxicity assessment for Hexafluoropropylene Oxide (HFPO) Dimer Acid and its Ammonium Salt (referred to as "GenX chemicals"). The final GenX chemicals assessment is part of EPA's efforts to increase the amount of information that is publicly available on chemicals in the PFAS class noted in EPA's Strategic Roadmap to address per- and polyfluoroalkyl substances (PFAS). The assessment presents a critical review of the available human health effects information on GenX chemicals. The assessment provides hazard identification, dose-response information, and derives toxicity values called oral reference doses (RfDs) for chronic and subchronic exposures. A toxicity assessment is a written summary of the potential health effects associated with a chemical and is similar to assessments developed under EPA's Integrated Risk Information System (IRIS).EPA plans to use this toxicity assessment and information on exposure, analytical methods and treatment to develop a Drinking Water Health Advisory in the spring of 2022.

Please provide me following information at your earliest convenience.
Date: Nov 3rd or 4th – Brittany, please let Shamima know your preference (or should she look at your calendar?)
Time: afternoon (eastern): Start time (see Brittany's calendar)
Duration: 1 or 1.5 or 2 hr (including Q&A) – 30 min min -45 min max

Title of the talk: Recent release of EPA's final Toxicity Assessment for GenX Chemicals
Presenter/s name: Brittany Jacobs, Ph.D.

I think Brittany will need about 20 min for the presentation and then 10 min questions.

Thanks for setting up the meeting.

Sue

From: Akhter, Shamima <Akhter.Shamima@epa.gov>
Sent: Monday, October 25, 2021 12:10 PM
To: Euling, Susan <Euling.Susan@epa.gov>
Cc: Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: RE: Scheduling FSTRAC meeting on release of Final Toxicity Assessment for GenX Chemicals

Hi Brittany,

I've retrieved following information (highlighted) from the past webinar on 'Overview of EPA draft toxicity assessments for the PFAS compounds, PFBS and GenX chemicals' – ORD and OW/EPA
held on Nov 28, 2018 from 1:00 – 2:30 pm.

Agenda

- Welcome and Introduction (1:05 – 1:10 p.m.)
- Overview of EPA draft toxicity assessments for the PFAS compounds, PFBS and GenX chemicals' – ORD and OW/EPA

Please provide updated information
EPA is seeking public input on draft toxicity assessments for GenX chemicals and PFBS, members of the larger chemical group called per- and polyfluoroalkyl substances (PFAS), that were released on November 14, 2018. The agency's draft assessments follow through on the first of four Agency commitments from the May 2018 National PFAS Leadership Summit. When final, the information the agency is providing may be used by states, tribes and communities to develop drinking water health advisory levels and potential regulatory values, inform fish consumption advisories, support modeling activities, perform risk assessments, and calculate risk-based clean-up goals.

We have the framework, just need to plug-in new information.
Please provide me following information at your earliest convenience.
Date: Nov 3rd or 4th
Time: afternoon (eastern): Start time
Duration: 1 or 1.5 or 2 hr (including Q&A)
Title of the talk:
Presenter/s name:

Thanks,
Shamima

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Thursday, October 21, 2021 2:35 PM
To: Akhter, Shamima <Akhter.Shamima@epa.gov>
Cc: Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: Scheduling FSTRAC meeting on release of Final Toxicity Assessment for GenX Chemicals

Hi Shamima,

Please set up a FSTRAC meeting for the week of Nov. 1st – Brittany will provide the presentation on the Release of the final EPA Toxicity Assessment for GenX Chemicals. Please work with Brittany's schedule and please also invite Betsy, Greg, and me to the meeting.

Thanks,
Sue

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 10/27/2021 5:24:15 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: FW: GenX release slides (high level) revised
Attachments: slide on state GenX values.pptx

Ex. 5 Deliberative Process (DP)

Sue

From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Wednesday, October 27, 2021 11:15 AM
To: Euling, Susan <Euling.Susan@epa.gov>
Subject: RE: GenX release slides (high level) revised

Ex. 5 Deliberative Process (DP)

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Wednesday, October 27, 2021 9:56 AM
To: Behl, Betsy <Behl.Betsy@epa.gov>
Subject: FW: GenX release slides (high level) revised

Ex. 5 Deliberative Process (DP)

And here is the CHPAC meeting registration information in case you want to attend too:
https://us02web.zoom.us/webinar/register/WN_Cg6dbq-gQM6rZqDt2qhJSw

---

From: Euling, Susan
Sent: Wednesday, October 27, 2021 9:46 AM
To: Behl, Betsy <Behl.Betsy@epa.gov>
Subject: FW: GenX release slides (high level) revised

Hi Betsy,

I do not think that having some backup slides on the PWG process would trigger a new clearance of these slides but I wanted to check with you to be sure.

Thanks,

Sue

From: Miller, GregoryG <Miller.Gregory@epa.gov>
Sent: Wednesday, October 27, 2021 9:02 AM
To: Euling, Susan <Euling.Susan@epa.gov>
Subject: RE: GenX release slides (high level) revised

Ex. 5 Deliberative Process (DP)

Greg Miller, Senior Environmental Health Scientist
Human Health Risk Assessment Branch
Office of Science and Technology, Health and Ecological Criteria Division
US Environmental Protection Agency, Office of Water
1200 Pennsylvania Ave, NW (MC 4304T)
Washington, DC 20460

phone: (202) 566-2310
miller.gregory@epa.gov

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Monday, October 25, 2021 11:14 AM
To: Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: GenX release slides (high level) revised

You may want to add more slides to the deck since you'll have more time to get into the weeds. I suggest adding in the slides about the PWG from the technical slide set that Brittany and you were using.

Do you have those slides? If not, please reach out to Brittany.

Sue

From: Miller, GregoryG <Miller.Gregory@epa.gov>
Sent: Monday, October 25, 2021 11:12 AM
To: Euling, Susan <Euling.Susan@epa.gov>
Subject: RE: GenX release slides (high level) revised

OCHP/CHPAC also wants the slides by cob today. Sent to Nica.

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Monday, October 25, 2021 11:00 AM
To: Behl, Betsy <Behl.Betsy@epa.gov>
Cc: Jacobs, Brittany <jacobs.brittany@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: GenX release slides (high level) revised
Importance: High

Hi Betsy,

This slide set has revisions from us plus the live GenX link (!! Yay!!).

If you would like me to add anything (I could add the ECOS mtg name and date of mtg if you think necessary), please let me know.

Once you have OKAYED them I can send to Lisa Matthews.

Sue

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 11/1/2021 1:25:17 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: 30 min to walk through GenX presentation

I know you are busy. Wondering if I could have 30 min of your time to walk through the GenX slides and you can give me feedback and ask me a couple of questions today.

30 min somewhere 12-1 or 2-3pm.

Thanks,
Sue

Appointment

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 11/1/2021 1:37:51 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]

Subject: GenX slide run through
Location: Microsoft Teams Meeting

Start: 11/1/2021 6:00:00 PM
End: 11/1/2021 6:30:00 PM
Show Time As: Tentative

Required Attendees: Jacobs, Brittany

Thanks for your help – I can get up to speed by running through the briefing slides and having you ask me a couple of hard questions.

Microsoft Teams meeting

Join on your computer or mobile app
Click here to join the meeting

Or call in (audio only)

Ex. 6 Personal Privacy (PP) s, Washington DC

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Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 11/1/2021 3:08:36 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: FW: issue in genx fact sheet to correct

This is **not** an issue in the actual assessment. Good news.

Aren't comms people reviewing fix these sorts of things?

From: Euling, Susan
Sent: Monday, November 1, 2021 11:01 AM
To: Lalley, Cara <Lalley.Cara@epa.gov>
Cc: Flaherty, Colleen <Flaherty.Colleen@epa.gov>; Jacobs, Brittany <Jacobs.Brittany@epa.gov>; Behl, Betsy <Behl.Betsy@epa.gov>
Subject: issue in genx fact sheet to correct

Ex. 5 Deliberative Process (DP)

And while you are at it could you correct this space:
GenX chemicals are man-made, fluorinated organic chemicals that are part of the PFAS chemical class .

Sue

Appointment

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 11/1/2021 5:08:44 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]

Subject: FW: Monthly PFAS Regional Coordination Call
Location: DCRoomPYS5671/OSRTI-Potomac-Yard-South

Start: 11/18/2021 5:00:00 PM
End: 11/18/2021 6:00:00 PM
Show Time As: Tentative

Recurrence: Monthly
the second Thursday of every 1 month(s) from 12:00 PM to 1:00 PM

-----Original Appointment-----
From: Gaines, Linda <Gaines.Linda@epa.gov>
Sent: Monday, October 25, 2021 10:02 AM
To: Gaines, Linda; Adams, Glenn; Armann, Steve; Bachman, Brenda; Beringer, Mike; Cassidy, Meghan; Fischer, Timothy; Gervais, Gregory; Mohollen, Laura; Tanaka, Joan; Graveline, Alyssa; Villarreal, Chris; Lyons, John; Wall, Dan; Cooke, Maryt; Schlieger, Brian; Schuver, Henry; Fitz-James, Schatzi; Anderson, RobinM; Sands, Charles; Foster, Stiven; Raffaele, Kathleen; Lovely, William; Jennings, Lynne; Loughlin, Anni; Carroll, Courtney; Cunningham, Lisa Bradford; Lloyd, Diedre; Hudson, Kimberly; Pluta, Bruce; Cutt, Diana; Messinger, Lisa; Brauner, David; Muniz, Nuria; Wilson, David; Frey, Rebecca; Quadri, Syed; Prendiville, Timothy; Novak, Dion; Hardin, David (Erik); Cianciarulo, Robert; Gehlhaus, Martin; Tuttle, Jeffrey; Davies, Kathy; Wendel, Jennifer; Taylor, Dawn; Thornton, Hilary; Watson, Linda (R3); Lyssy, Gregory; Shaffer, Caleb; Goldblum, Deborah; Azzam, Nidal; Allen, Elizabeth; Metz, Chloe; Vu, Chau; Halstead, Sandra; Rossi, Debra; Carpenter, Angela; Sivak, Michael; Aultz, Erica; Hamblin, Patrick; Seely, David; OBrien, Wendy; Stralka, Daniel; Schumacher, Kelly; Burr, Kimberly; Hodes, Colette; Meyer, John; Mooney, Charlotte; Libelo, Laurence; Luke, April; Clements, Mindy; Fronczak, David; Allenbach, Becky; Thompson, Robert A.; Filipowicz, Urszula; Connell, Rebecca; Jurist, Karen; Herrera, Angeles; Burchette, John; Acheson, Carolyn; Bowen, Sharon; Schulz, Susan; Knittel, Janette; Fuentes, Rene; Einan, David; Barbieri, Andrea; Juett, Lynn; Collins, Charlie; Taylor, Melissa; Anderson, Kate; Bhullar, Charnjit; Everett, Adolph; Anderson, Arlene; Rasso, Mark; Driscoll, Stacie; Lowe, Jill; Bleiler, Justin; Turner, Philip; Bott, Dustan; Harris, Kimberly; Kidwell, JessicaL; DAgostino, Daniel; Wilson, Patrick; Bhattacharya, Dipanjana; Khoury, Ghassan; Milburn, Anna; Rauscher, Jon; Shewmake, Kenneth; Gorman, John; Eidelberg, Joseph; Chan, Sydney; Evangelista, Pat; Tsui-Bowen, Alethea; King, Laurie; Chow, Eugenia; Mitguard, Matt; Ramirez, Leslie; Koporec, Kevin; Tavassoli, Lily; Kimble, Jeffrey; Fusinski, Keith; Ferreira, James; Meier, Kathleen; Caporale, Cynthia; Mankowski, Matthew; Mendez, Thomas; Polster, Jenny; Leonard, Paul; Shields, Amy; Morton, Michael; Shimeles, Taetaye; Weber, Robert; O'Loughlin, Connor; Edwards, Jennifer; Conetta, Benny; Haklar, James; O'Connor, Daniel; Birchfield, Norman; Holsinger, Hannah; Cisneros, Jose; Moore, Tammy; Beedle, Michael; McLeod, Jennifer; Folland, William; Wainberg, Daniel; Newman, Keriema; Jones, Aaryn; Blake, Leslie; Clark, Jacqueline; Buelow, Laura; Kolak, Shari; Safakas, Kirstin; Leipert, Mark; Williams, Thomas; Dodds, Jennifer; Neal, Conor; Sundar, Bhooma; Ash, Christine; Russell, Diane; Kloss, Sarah; Johnston, John E.; Fisher, Susan; Galbraith, Michael; Atkins, Blake; Baier-Anderson, Caroline; Wooster-Brown, Catherine; Nevshehirlian, Stepan; Keating, Carol; Reimer, Steve; Reese, Diane; Strock, Troy; Buso, Roberto X; Holst, Linda; Sasnow, Zachary; Freed, Elisabeth; Shah, Harry; Pane, Vickie; Langlois-Miller, Christina; Fagnant, Daniel; Helms, Greg; Kirkland, Kim; Lamberth, Larry; Yap-deffler, Yazmine; Edgerton, David; Canova, Judy; Aguilar, Marcus; Hidalgo, Chelsea; Lohwater, Natasha; Lan, Alexis; McKeePerez, Nancy; Pachon, Carlos; Gilbert, Edward; Poulos, Lauren; Blocker, Shawn; Beller, Harry; Frederick, Tim; Gerhard, Sasha; Ross, Stephanie D; O'Neal, Kelly; Schmalstieg, Jared; Peck, Michelle; Garnett, Becky; Garcia, Javier; Andrews, David; Urquhart-Foster, Samantha; Bailey, Lynn
Cc: Pendleton, Gracie; Asque, Gillian; Huffman, Diane; Royal, Emily; Kennedy, Cathleen; Vanlerberghe, Daren; Gaffney,

Kristeen; Churchill, Stephen; Alexander, Shanna; Small, Matthew; Keteles, Kristen; Hartzell, Sharon; Mollin, Jessica; Hockey, David; Haug, Susanne; Davis, Ifeyinwa; Lynn Bailey; Solis Marcano, Nadja; Mroz, Aaron; Cashman, Michaela; Aker, Sandra; Masters, Stacie; Cantwell, Mark; Ireland, Sean; Jones, Leslie; Walker, Tom; Cuthbertson, Becky; Crincoli, Klara; Davis, Amber; Gross-Davis, CarolAnn; Deatrick, John; Schaub, Lisa; Dressel, Paul; Baxter, Madison; Pfeiffer, Tricia; Bowen, Ian; Benson, Bob; Boucher, Aimee; Oxendine, Sharon; Lowrey, Daniel; Vasser, Bryan; Taylor, Daniel; Harden, Samantha; Teichert, Candice; Holleran, Anne; Chavez, Araceli; York, Brooke; Scharr, Ruth; Hubbard, Jennifer; Foster, Barbara; Gerhart, Rebecca; Jones, Athena; Euling, Susan; Behl, Betsy; Burneson, Eric; Rodgers-Jenkins, Crystal; Olsen, Marian; Tuazon, Veronica; Latier, Andrea
Subject: Monthly PFAS Regional Coordination Call
When: Thursday, November 18, 2021 12:00 PM-1:00 PM (UTC-05:00) Eastern Time (US & Canada).
Where: DCRoomPYS5671/OSRTI-Potomac-Yard-South

Our regularly scheduled call falls on the Veterans Day holiday, so I am rescheduling for the week before. I hope many can make it. (Sorry for rescheduling again. Last minute conflict).

Agenda:

1. Release of the final Human Health Toxicity Assessment for GenX Chemicals - OW

Join Microsoft Teams Meeting

Ex. 6 Personal Privacy (PP) ington DC (Toll)

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Appointment

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 5/18/2021 2:17:08 PM
To: Miller, GregoryG [Miller.Gregory@epa.gov]; Soares, Barbara [soares.barbara@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Lindberg, Casey [Lindberg.Casey@epa.gov]

Subject: Discussion of budget FY21 and 22 PFAS
Location: Microsoft Teams Meeting

Start: 5/18/2021 6:30:00 PM
End: 5/18/2021 7:00:00 PM
Show Time As: Tentative

Required Attendees: Miller, GregoryG; Soares, Barbara; Jacobs, Brittany; Lindberg, Casey

To finalize –

Ex. 5 Deliberative Process (DP)

Microsoft Teams meeting

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Or call in (audio only)

Ex. 6 Personal Privacy (PP) States, Washington DC

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By participating in EPA hosted virtual meetings and events, you are consenting to abide by the agency's terms of use. In addition, you acknowledge that content you post may be collected and used in support of FOIA and eDiscovery activities.

Learn More | Meeting options

Appointment

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 5/18/2021 2:40:57 PM
To: Miller, GregoryG [Miller.Gregory@epa.gov]; Soares, Barbara [soares.barbara@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Lindberg, Casey [Lindberg.Casey@epa.gov]

Subject: Discussion of budget FY21 and 22 PFAS
Location: Microsoft Teams Meeting

Start: 5/18/2021 6:00:00 PM
End: 5/18/2021 6:30:00 PM
Show Time As: Tentative

Required Attendees: Miller, GregoryG; Soares, Barbara; Jacobs, Brittany; Lindberg, Casey

To finalize –

Ex. 5 Deliberative Process (DP)

Microsoft Teams meeting

Join on your computer or mobile app
Click here to join the meeting

Or call in (audio only)
Ex. 6 Personal Privacy (PP) ates, Washington DC

Find a local number | Reset PIN

By participating in EPA hosted virtual meetings and events, you are consenting to abide by the agency's terms of use. In addition, you acknowledge that content you post may be collected and used in support of FOIA and eDiscovery activities.

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Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 5/19/2021 6:29:49 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: RE: GenX Review: Individual Comments

Fantastic! Feel free to use the contractor to compile and organize comments.

I was mentioning to Greg that once you have topics for the different comments, then the intra-Agency comments could be slotted in to ones that are similar to the peer reviewer comments. My hope is that there is nothing unique in the agency comments. Full disclosure – I was one of the OCHP reviewers so can provide any clarifications on those if needed – whether unique or not!

Let me know how I can help.

Sue

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Wednesday, May 19, 2021 2:23 PM
To: Miller, GregoryG <Miller.Gregory@epa.gov>
Cc: Euling, Susan <Euling.Susan@epa.gov>
Subject: RE: GenX Review: Individual Comments

EXCITING…will start making my way through and put together a summary table

From: Miller, GregoryG <Miller.Gregory@epa.gov>
Sent: Wednesday, May 19, 2021 1:18 PM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>
Cc: Euling, Susan <Euling.Susan@epa.gov>
Subject: FW: GenX Review: Individual Comments

Just waiting on Dr. Slitt's comments. Below is the list of final selected reviewers that we received concurrence on from Jamie.

Karen Chou, Ph.D.; Associate Professor, Michigan State University	Reproductive/developmental toxicology, risk assessment
*Elaine M. Faustman, Ph.D., DABT; Professor, University of Washington	Reproductive and developmental toxicology and risk assessment methodologies
Lisa Kamendulis, PH.D.; Associate Professor, Department of Environmental Health, Indiana University	Liver toxicology, risk assessment, dose-response, PFOA research
Angela Leung, M.D.; Health Sciences Clinical Assistant Professor of Medicine, David Geffen School of Medicine; University of California Los Angeles	Thyroid expertise
*Andrew Salmon, Ph.D.; Retired, California Environmental Protection Agency	Risk assessment methodologies; some reproductive toxicology
Angela Slitt, Ph.D.; Associate Professor, Department of Biomedical and Pharmaceutical Sciences, University of Rhode Island	Liver toxicology, PFOA/PFAS metabolism, some kidney toxicity

David "Alan" Warren, Ph.D.; Program Director, Environmental Health Science, University of South Carolina Beaumont	Benchmark-dose modeling, toxicology, risk assessment, hematotoxicity, immunotoxicity

*new addition

From: Shams, Dahnish <Shams.Dahnish@epa.gov>
Sent: Wednesday, May 19, 2021 11:13 AM
To: Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: FW: GenX Review: Individual Comments

FYI – Initial set of comments Greg. ERG will compile them all into one report early next week.

- Dahnish

Chemical & Pollutant Assessment Division (CPAD)
Center for Public Health and Environmental Assessment (CPHEA)
Office of Research and Development, U.S. EPA
O: (202) 564-2758

From: Laurie Waite <Laurie.Waite@erg.com>
Sent: Tuesday, May 18, 2021 5:10 PM
To: Shams, Dahnish <Shams.Dahnish@epa.gov>
Subject: GenX Review: Individual Comments

Hi Dahnish,

While we await the last reviewer's comments I am passing on the other six sets of comments received so EPA may begin looking at them. Please let me know if you need any clarifications from reviewers. I will pass on the final set once received.

Thanks,
Laurie

^<>^<>^<>^<>^<>^<>^<>^<>^
Laurie Waite, Project Manager
Peer Review Services
Eastern Research Group, Inc.
110 Hartwell Avenue
Lexington, MA 02421
781-674-7362; 978-660-5583 (cell)
Laurie.Waite@erg.com
LinkedIn
Pronouns: she/her/hers

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 5/19/2021 6:38:21 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: RE: GenX Review: Individual Comments

BTW that is a lot of reviewers! I thought it would be 3 reviewers.

The bases are all covered. Very thorough job!

Sue

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Wednesday, May 19, 2021 2:23 PM
To: Miller, GregoryG <Miller.Gregory@epa.gov>
Cc: Euling, Susan <Euling.Susan@epa.gov>
Subject: RE: GenX Review: Individual Comments

EXCITING…will start making my way through and put together a summary table

---

From: Miller, GregoryG <Miller.Gregory@epa.gov>
Sent: Wednesday, May 19, 2021 1:18 PM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>
Cc: Euling, Susan <Euling.Susan@epa.gov>
Subject: FW: GenX Review: Individual Comments

Just waiting on Dr. Slitt's comments. Below is the list of final selected reviewers that we received concurrence on from Jamie.

Karen Chou, Ph.D.; Associate Professor, Michigan State University	Reproductive/developmental toxicology, risk assessment
*Elaine M. Faustman, Ph.D., DABT; Professor, University of Washington	Reproductive and developmental toxicology and risk assessment methodologies
Lisa Kamendulis, PH.D.; Associate Professor, Department of Environmental Health, Indiana University	Liver toxicology, risk assessment, dose-response, PFOA research
Angela Leung, M.D.; Health Sciences Clinical Assistant Professor of Medicine, David Geffen School of Medicine; University of California Los Angeles	Thyroid expertise
*Andrew Salmon, Ph.D.; Retired, California Environmental Protection Agency	Risk assessment methodologies; some reproductive toxicology
Angela Slitt, Ph.D.; Associate Professor, Department of Biomedical and Pharmaceutical Sciences, University of Rhode Island	Liver toxicology, PFOA/PFAS metabolism, some kidney toxicity
David "Alan" Warren, Ph.D.; Program Director, Environmental Health Science, University of South Carolina Beaumont	Benchmark-dose modeling, toxicology, risk assessment, hematotoxicity, immunotoxicity

*new addition

From: Shams, Dahnish <Shams.Dahnish@epa.gov>
Sent: Wednesday, May 19, 2021 11:13 AM
To: Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: FW: GenX Review: Individual Comments

FYI – Initial set of comments Greg. ERG will compile them all into one report early next week.

- Dahnish

Chemical & Pollutant Assessment Division (CPAD)
Center for Public Health and Environmental Assessment (CPHEA)
Office of Research and Development, U.S. EPA
O: (202) 564-2758

From: Laurie Waite <Laurie.Waite@erg.com>
Sent: Tuesday, May 18, 2021 5:10 PM
To: Shams, Dahnish <Shams.Dahnish@epa.gov>
Subject: GenX Review: Individual Comments

Hi Dahnish,

While we await the last reviewer's comments I am passing on the other six sets of comments received so EPA may begin looking at them. Please let me know if you need any clarifications from reviewers. I will pass on the final set once received.

Thanks,
Laurie

^<>^<>^<>^<>^<>^<>^<>^<>^
Laurie Waite, Project Manager
Peer Review Services
Eastern Research Group, Inc.
110 Hartwell Avenue
Lexington, MA 02421
781-674-7362; 978-660-5583 (cell)
Laurie.Waite@erg.com
LinkedIn
Pronouns: she/her/hers

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 5/25/2021 1:59:37 PM
To: Miller, GregoryG [Miller.Gregory@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: RE: GenX Review: Final Set of Reviewer Comments

Woohoo!

Fantastic news!

From: Miller, GregoryG <Miller.Gregory@epa.gov>
Sent: Tuesday, May 25, 2021 6:33 AM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>
Cc: Euling, Susan <Euling.Susan@epa.gov>
Subject: GenX Review: Final Set of Reviewer Comments

From: Shams, Dahnish <Shams.Dahnish@epa.gov>
Sent: Monday, May 24, 2021 6:01 PM
To: Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: FW: GenX Review: Final Set of Reviewer Comments

FYI – Last set of comments. A compiled draft report will be delivered shortly with all the comments.

- Dahnish

Chemical & Pollutant Assessment Division (CPAD)
Center for Public Health and Environmental Assessment (CPHEA)
Office of Research and Development, U.S. EPA
O: (202) 564-2758

From: Laurie Waite <Laurie.Waite@erg.com>
Sent: Monday, May 24, 2021 3:19 PM
To: Shams, Dahnish <Shams.Dahnish@epa.gov>
Subject: GenX Review: Final Set of Reviewer Comments

Hi Dahnish,

Please find attached the last set of reviewer comments for the GenX assessment. Please let me know if you need any clarifications from reviewers.

We will prepare and send a draft report of compiled comments (same format as for PFBS) as soon as possible this week.

Thanks,
Laurie

^<>^<>^<>^<>^<>^<>^<>^<>^
Laurie Waite, Project Manager
Peer Review Services
Eastern Research Group, Inc.

110 Hartwell Avenue
Lexington, MA 02421
781-674-7362; 978-660-5583 (cell)
Laurie.Waite@erg.com
LinkedIn
Pronouns: she/her/hers

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 5/27/2021 8:01:43 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]
CC: Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: GenX

I confirmed with Betsy that no disposition of comments is needed for the internal review comments.

For the peer review comments, she thought that the disposition of comments 1) is needed (of course); and 2) the format (i.e., lumping or splitting, grouping by topic) can be whatever makes the most sense given the comments received and from your perspective.

Sue

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 6/2/2021 3:48:23 AM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: RE: GenX: 7th review back?
Attachments: GenX 2nd Review Comment Summary_5.19.21 sye comments 060121.docx; GenX chemicals_subchronic to chronic UF rationale comparison.docx

Hi Brittany and Greg,

Your response to comments (RtC) table looks really good! I have put some comments in both of these documents (attached) more to spur discussion of the key issues which seem to be Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

Thanks!
Sue

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Tuesday, May 25, 2021 8:03 AM
To: Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: GenX: 7th review back?

Hi Sue,

Attached is my table for the external peer review comment summary. For now, I added the summary Greg did for the internal agency comments at the top. If you like the format of the table, I can do something similar for the internal agency comments. Also attached if the rationale for the subchronic to chronic UF from 2018 and in the current draft.

Britt

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Monday, May 24, 2021 2:00 PM
To: Miller, GregoryG <Miller.Gregory@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: RE: GenX: 7th review back?

Thanks. Do you have a plan for how you will integrate the agency comments? Hand off to Brittany or keep them separate?

If you guys have a meeting, please invite me.

Sue

From: Miller, GregoryG <Miller.Gregory@epa.gov>
Sent: Monday, May 24, 2021 12:36 PM
To: Euling, Susan <Euling.Susan@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: RE: GenX: 7th review back?

No. I haven't put together a table of the Agency Review comments. I had planned to pick up all of the comments and work with Brittany upon her return. I suspect there are a number of overlapping issues between the agency and external comments. Brittany has been looking at the comments and can give a more informative response when she's back online tomorrow.

We're still waiting on the last set of comments from Dahnish. I'll let you know asap when they come in.

Greg

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Monday, May 24, 2021 11:55 AM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>
Cc: Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: GenX: 7th review back?

Hi Brittany,

I hope that you have all of the reviews now! Would love to look over a table of the comments.

Greg, do you have an organized table of the agency comments? Were you planning to keep the comments separate or rolling together? As I said before, if you find no unique comments in the agency comments, then it's easy. But even if no comments are different --- I think there are some agency comments that may be helpful re the 3X vs. 10X UFS discussion...so please check that out given the peer review comments.

Also, could you send me the language justifying the 10X UFS in 2021 draft and the language justifying the 3X UFS in the 2018 draft?

Thanks,
Sue

Appointment

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 6/3/2021 2:38:20 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]

Subject: Accepted: GenX Assessment Check-In
Location: Microsoft Teams Meeting

Start: 6/9/2021 3:00:00 PM
End: 6/9/2021 4:00:00 PM
Show Time As: Busy

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 6/3/2021 2:51:10 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: RE: ORD Comments on GenX draft

Thanks!

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Thursday, June 3, 2021 9:28 AM
To: Euling, Susan <Euling.Susan@epa.gov>
Subject: ORD Comments on GenX draft

See section 7.3 for ORD's comments on UF

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 6/3/2021 6:16:10 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: RE: 7th reviewer GenX

Betsy asked me to give a quick update at the HECD biweekly so that is why I was scrambling for bottomline.

Thanks,
Sue

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Thursday, June 3, 2021 2:05 PM
To: Euling, Susan <Euling.Susan@epa.gov>
Subject: RE: 7th reviewer GenX

Correct

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Thursday, June 3, 2021 1:58 PM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: RE: 7th reviewer GenX

Never mind. I had thought that your summary table had only included the 6 reviewers but I just counted and there are 7.

In summary:

- 7/7 agree with 10X DBUF
- 5/7 agree with 10X SCUF or did not have an opinion; 2/7 disagree wth 10X and recommend 3X.

Sue

From: Euling, Susan
Sent: Thursday, June 3, 2021 1:54 PM
To: Jacobs, Brittany <Jacobs.Brittany@epa.gov>
Subject: 7th reviewer GenX

Hi Brittany,

Did the 7th reviewer agree on 10X for DB and SC?

Thanks,
Sue

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 6/4/2021 10:48:56 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: FW: GenX mtg follow up

FYI…I'll let you know what she says.

From: Euling, Susan
Sent: Friday, June 4, 2021 6:48 PM
To: Jones, Samantha <jones.samantha@epa.gov>
Subject: GenX mtg follow up

Hi Samantha,

Thanks for meeting with us about GenX. We (HRAB/OST) would like to take you up on your offer of expert assistance on surgically revising the GenX study qual eval description (mix of OPPT and IRIS)…with minimal effort and maximum justification! I discussed this with Brittany and we both thought of Kris Thayer. Kris and Brittany have worked together on the SR for PFOA/S as well. Even 30 min of her time would help us work through the issue. Could we reach out to her?

Have a great weekend!

Thanks,
Sue

Susan Euling, Ph.D.
Acting Branch Chief, Human Health Risk Assessment Branch
Office of Science and Technology, Office of Water
U.S. Environmental Protection Agency
(o) 202-566-2717
(awl) Ex. 6 Personal Privacy (PP)

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 6/7/2021 2:45:50 PM
To: Miller, GregoryG [Miller.Gregory@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: GenX update

Hi Brittany and Greg,

I presented a brief overview of the status of GenX to Deborah last Thursday at the biweekly. I told her that there were 3 main issues, based on Brittany's report out to ORD last week, to resolve –

Ex. 5 Deliberative Process (DP)

Thanks,
Sue

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 6/8/2021 4:30:16 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: RE: GenX discussion with ORD

OK good.

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Tuesday, June 8, 2021 12:03 PM
To: Euling, Susan <Euling.Susan@epa.gov>
Subject: RE: GenX discussion with ORD

Both sounds good to me. The 6/16 can be cancelled if we end up not needing it but it'll be good to have the time blocked.

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Tuesday, June 8, 2021 11:41 AM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: RE: GenX discussion with ORD

Or 30 min on both dates? That way can introduce issue tomorrow am and then they can think about it for a week and then provide recommendations on 6/16?

From: Euling, Susan
Sent: Tuesday, June 8, 2021 11:28 AM
To: Jacobs, Brittany <Jacobs.Brittany@epa.gov>
Subject: GenX discussion with ORD

Hi Brittany,

Kris and most everyone is available at 8am tomorrow or 6/16 (next wed). Do you have a preference?

Sue

Appointment

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 6/10/2021 3:58:06 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]

Subject: Accepted: GenX follow-up discussion UFS
Location: Microsoft Teams Meeting

Start: 6/15/2021 2:00:00 PM
End: 6/15/2021 3:00:00 PM
Show Time As: Busy

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 6/9/2021 4:09:48 AM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: RE: Task 68HERH20F0097: Draft Compiled Peer Review Report for GenX

I was thinking it was odd that one (or two?) reviewers thought that the rationale was not different bet 2018 and 2021 when it is different. I thought the reviewers may be able to clarify what they mean by same rationale.

If you don't want to ask, that's up to you. Just worth thinking about whether you want a "last call" before closing the door.

Talk tomorrow,
Sue

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Tuesday, June 8, 2021 9:34 PM
To: Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: Task 68HERH20F0097: Draft Compiled Peer Review Report for GenX

You mean for additional rationale on why the two reviewers didn't agree with the UFS? No questions on the 6 studies submitted. I don't have any additional questions.

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Tuesday, June 8, 2021 11:25 AM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: FW: Task 68HERH20F0097: Draft Compiled Peer Review Report for GenX

Letting you be the judge of whether there are any questions to ask the reviewers. Wondering whether we could ask about the UFS and also, any questions about the 6 articles that one reviewer provided?

Sue

From: Shams, Dahnish <Shams.Dahnish@epa.gov>
Sent: Tuesday, June 8, 2021 11:23 AM
To: Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: RE: Task 68HERH20F0097: Draft Compiled Peer Review Report for GenX

Hi Brittany/Greg/Sue – Is OW ok with the draft GenX report? Do you need any further clarifications from the reviewers? If not, I will go ahead and as ERG to finalize the draft report and we can call this peer review complete.

Let me know.

Thanks!

Dahnish

Chemical & Pollutant Assessment Division (CPAD)
Center for Public Health and Environmental Assessment (CPHEA)

Office of Research and Development, U.S. EPA
O: (202) 564-2758

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Friday, May 28, 2021 10:13 AM
To: Shams, Dahnish <Shams.Dahnish@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: RE: Task 68HERH20F0097: Draft Compiled Peer Review Report for GenX

Fantastic!

From: Shams, Dahnish <Shams.Dahnish@epa.gov>
Sent: Friday, May 28, 2021 10:01 AM
To: Miller, GregoryG <Miller.Gregory@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Cc: Euling, Susan <Euling.Susan@epa.gov>
Subject: RE: Task 68HERH20F0097: Draft Compiled Peer Review Report for GenX

Great! Thanks Greg.

Brittany – I'll keep an eye out for any emails from you next week.

Have a great long weekend everyone!

- Dahnish

Chemical & Pollutant Assessment Division (CPAD)
Center for Public Health and Environmental Assessment (CPHEA)
Office of Research and Development, U.S. EPA
O: (202) 564-2758

From: Miller, GregoryG <Miller.Gregory@epa.gov>
Sent: Friday, May 28, 2021 6:45 AM
To: Shams, Dahnish <Shams.Dahnish@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Cc: Euling, Susan <Euling.Susan@epa.gov>
Subject: FW: Task 68HERH20F0097: Draft Compiled Peer Review Report for GenX

This is great Dahnish. Thanks! Brittany is back from her maternity leave and will respond to you on the need for any clarifications. Please continue to cc me as she is working part-time for the next few weeks.

Thanks again for you help on all of this!

Greg Miller, Senior Environmental Health Scientist
Human Health Risk Assessment Branch
Office of Science and Technology, Health and Ecological Criteria Division
US Environmental Protection Agency, Office of Water
1200 Pennsylvania Ave, NW (MC 4304T)
Washington, DC 20460

phone: (202) 566-2310
miller.gregory@epa.gov

From: Shams, Dahnish <Shams.Dahnish@epa.gov>
Sent: Thursday, May 27, 2021 5:34 PM
To: Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: FW: Task 68HERH20F0097: Draft Compiled Peer Review Report for GenX

Hi Greg – See draft report. Can you let me know next week if you need any clarifications from the reviewers?

The last step is to have ERG finalize the report. Once that is complete, the peer review is complete and we can't go back.

- Dahnish

Chemical & Pollutant Assessment Division (CPAD)
Center for Public Health and Environmental Assessment (CPHEA)
Office of Research and Development, U.S. EPA
O: (202) 564-2758

From: Laurie Waite <Laurie.Waite@erg.com>
Sent: Thursday, May 27, 2021 4:27 PM
To: Shams, Dahnish <Shams.Dahnish@epa.gov>
Subject: Task 68HERH20F0097: Draft Compiled Peer Review Report for GenX

Dear Dahnish,

Please find attached a draft of the compiled peer review report for GenX Chemicals. Please let me know if EPA needs any clarifications from reviewers. Once you indicate no clarifications are needed, we will finalize and deliver the final peer review report.

Kind Regards,
Laurie

^<>^<>^<>^<>^<>^<>^<>^<>^
Laurie Waite, Project Manager
Peer Review Services
Eastern Research Group, Inc.
110 Hartwell Avenue
Lexington, MA 02421
781-674-7362; 978-660-5583 (cell)
Laurie.Waite@erg.com
LinkedIn
Pronouns: she/her/hers

Appointment

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 6/8/2021 5:46:04 PM
To: Miller, GregoryG [Miller.Gregory@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Thayer, Kris [thayer.kris@epa.gov]
CC: Kraft, Andrew [Kraft.Andrew@epa.gov]; Shams, Dahnish [Shams.Dahnish@epa.gov]; Soto, Vicki [Soto.Vicki@epa.gov]

Subject: Part 2: GenX SR/study qual eval discussion
Location: Microsoft Teams Meeting

Start: 6/15/2021 7:00:00 PM
End: 6/15/2021 7:30:00 PM
Show Time As: Tentative

Required Attendees: Miller, GregoryG; Jacobs, Brittany; Thayer, Kris
Optional Attendees: Kraft, Andrew; Shams, Dahnish; Soto, Vicki

Agenda: ORD recommendations to OST. GenX peer review draft attached to 061021 mtg invite.

Thanks,
Sue

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Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 6/10/2021 3:30:21 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: GenX mtg with Kris

Hi Brittany,

Confirming that you will be leading the meeting. If you want me to say anything to kick off the discussion, then let me know!

Sue

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 6/9/2021 4:12:33 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: RE: Human half-life estimate for GenX is now available
Attachments: SEV-700-242-3-1_DEC_Final_PUBLIC_15157_en.pdf

Pdfed the longer version of the public version of the Chemours study. Human ½ life study is on pp. 12-15.

From: Euling, Susan
Sent: Wednesday, June 9, 2021 12:08 PM
To: Jacobs, Brittany <Jacobs.Brittany@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: FW: Human half-life estimate for GenX is now available

This pdf is the view from the ECHA website that you navigated to.

FYI about email with Tala:

From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Wednesday, June 9, 2021 11:55 AM
To: Henry, Tala <Henry.Tala@epa.gov>
Cc: Euling, Susan <Euling.Susan@epa.gov>
Subject: FW: Human half-life estimate for GenX is now available

Tala, attached is the email from Gloria about this study. We would very much like to get this information asap. The summary is on the ECHA website (link in Gloria's email below.

Thanks for letting me know what Chemours says about when it is available.

Betsy

Elizabeth (Betsy) Behl, Director Health and Ecological Criteria Division,
Office of Science and Technology, Office of Water, EPA
Office: 202-566-0788
Cell: Ex. 6 Personal Privacy (PP)

From: Post, Gloria (DEP) <Gloria.Post@dep.nj.gov>
Sent: Monday, May 31, 2021 9:17 AM
To: Behl, Betsy <Behl.Betsy@epa.gov>
Subject: Human half-life estimate for GenX is now available

Betsy,

You and your staff may already be aware of this, but I wanted to make sure that you and your staff who are working on the GenX risk assessment are aware that a human half-life estimate for GenX is now available.

ECHA had required that Chemours conduct a human biomonitoring study of GenX at is Dordrecht facility in the Netherlands. See p. 12-15 of this document https://echa.europa.eu/documents/10162/2d98dcf1-b069-18d5-520c-bee047c0d47e

I had communicated with scientists at the Netherlands environmental agency (RIVM) to find out if this study had been completed. It is completed, but Chemours has not made the study report publicly available so RIVM cannot share it with NJDEP.

However, a summary of the study, including a human half-life estimate of 81 hours, is posted on the ECHA website at https://urldefense.com/v3/__https:/echa.europa.eu/nl/registration-dossier/-/registered-dossier/2679/7/11/6__;!!J30X0ZrnC1oQtbA!bInPS1S6QkDVFZnB_eOoBzoLdhtWjLET3V8td60NXVgySbPX6c-cJ07WklH8ZzzaklsvUA$ To find it, you need to go to the dropdown box at the top and select the second study.

I am attaching a PDF of the information that is posted on the website.

Best regards,
Gloria

Ammonium... - Registration Dossier - ECHA

urldefense.com

Gloria B. Post, Ph.D., DABT
Research Scientist

Division of Science and Research
New Jersey Department of Environmental Protection
Mail Code 428-01, PO Box 420
Trenton, NJ 08625-0420

Telephone: (609) 292-8497
Fax: (609) 292-7340

Appointment

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 6/14/2021 4:53:04 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]

Subject: GenX SR IRIS style
Location: Microsoft Teams Meeting

Start: 6/15/2021 1:30:00 PM
End: 6/15/2021 2:00:00 PM
Show Time As: Tentative

Required Attendees: Jacobs, Brittany

Hi Brittany,

I talked to Kris about options – let's find a time to walk through the options.

Sue

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Appointment

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 6/10/2021 6:01:23 PM
To: Miller, GregoryG [Miller.Gregory@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Thayer, Kris [thayer.kris@epa.gov]
CC: Kraft, Andrew [Kraft.Andrew@epa.gov]; Shams, Dahnish [Shams.Dahnish@epa.gov]; Soto, Vicki [Soto.Vicki@epa.gov]

Subject: Canceled: Part 2: GenX SR/study qual eval discussion
Location: Microsoft Teams Meeting

Start: 6/15/2021 7:00:00 PM
End: 6/15/2021 7:30:00 PM
Show Time As: Free

Importance: High

Required Attendees: Miller, GregoryG; Jacobs, Brittany; Thayer, Kris
Optional Attendees: Kraft, Andrew; Shams, Dahnish; Soto, Vicki

Agenda: ORD recommendations to OST. GenX peer review draft attached to 061021 mtg invite.

Thanks,
Sue

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Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 6/14/2021 5:53:00 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: RE: GenX SR IRIS style

I could talk at 4:30pm if that works better than tomorrow morning.

Sue

-----Original Appointment-----
From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Monday, June 14, 2021 1:01 PM
To: Euling, Susan
Subject: Accepted: GenX SR IRIS style
When: Tuesday, June 15, 2021 9:30 AM-10:00 AM (UTC-05:00) Eastern Time (US & Canada).
Where: Microsoft Teams Meeting

Okay, just fyi I am chatting with ICF about options to get this work going on Tuesday afternoon.

Appointment

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 6/15/2021 5:23:11 AM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]

Subject: Canceled: GenX SR IRIS style
Location: Microsoft Teams Meeting

Start: 6/15/2021 1:30:00 PM
End: 6/15/2021 2:00:00 PM
Show Time As: Free

Importance: High

Required Attendees: Jacobs, Brittany

I'm cancelling this meeting because I think we can roll this discussion into the 10am meeting.

Sue

Hi Brittany,

I talked to Kris about options – let's find a time to walk through the options.

Sue

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From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 6/15/2021 1:01:22 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: RE: for GenX Mtg

Yes, that works for me. Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Tuesday, June 15, 2021 7:24 AM
To: Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: for GenX Mtg

Note that this is what we say in the DB UF about the lack of a subchronic study:

Ex. 5 Deliberative Process (DP)

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Tuesday, June 15, 2021 1:23 AM
To: Miller, GregoryG <Miller.Gregory@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: for GenX Mtg

Some thoughts:
2018 justification for a 3X UFS for the chronic RfD:

1)

Ex. 5 Deliberative Process (DP)

2)

2021 draft justification for 10X UFS for chronic RfD:

1)

Ex. 5 Deliberative Process (DP)

Suggest -

1)

2)

Ex. 5 Deliberative Process (DP)

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 6/15/2021 1:21:05 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: RE: for GenX Mtg

From Defaults draft – IRIS assessments and 3 vs. 10X rationales:

Short Rationale	UFs Value Applied		
	1	3	10

Ex. 5 Deliberative Process (DP)

toxicodynamics and toxicokinetics.

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Tuesday, June 15, 2021 7:24 AM
To: Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: for GenX Mtg

Note that this is what we say in the DB UF about the lack of a subchronic study:

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Tuesday, June 15, 2021 1:23 AM
To: Miller, GregoryG <Miller.Gregory@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: for GenX Mtg

Some thoughts:
2018 justification for a 3X UFS for the chronic RfD:

1) Ex. 5 Deliberative Process (DP)

2)

2021 draft justification for 10X UFS for chronic RfD:

1) Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

Suggest -

1)

2)

Ex. 5 Deliberative Process (DP)

Appointment

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 6/21/2021 2:54:55 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]

Subject: HRAB one-on-one: Brittany
Location: Microsoft Teams Meeting

Start: 6/24/2021 1:00:00 PM
End: 6/24/2021 1:30:00 PM
Show Time As: Tentative

Recurrence: Weekly
every Thursday from 9:00 AM to 9:30 AM
Required Attendees: Jacobs, Brittany

Agenda:

1) Next steps are for DBPs – Melanie
2) GenX update – precedent for 10X UFS (I am working on it)
3) PFAS work update
4) Other?

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From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 6/21/2021 1:50:21 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: RE: timing on the contractor study quality evaluation for GenX?

OK thanks. Keep me posted. Just was curious for providing an OST management update but not urgent.

Sue

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Monday, June 21, 2021 9:46 AM
To: Euling, Susan <Euling.Susan@epa.gov>
Subject: RE: timing on the contractor study quality evaluation for GenX?

Hi Sue, good morning,

Not yet, they will get us an updated workplan likely this week and then I will have a better idea. I will ask at our check-in call tomorrow.

Britt

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Monday, June 21, 2021 9:44 AM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: timing on the contractor study quality evaluation for GenX?

Hi Brittany,

Do you know the time of completion of the work?

Thanks,
Sue

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 6/21/2021 12:13:17 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: RE: GenX RA

Thanks for the history.

Sue

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Monday, June 21, 2021 5:09 AM
To: Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: GenX RA

Chemours paid this guy to complete this RA. It was also submitted during our public comment period where it is clearer that Damien Shea was paid by Chemours to do it. We have responded to it in the response to comment doc.

From: Euling, Susan Euling.Susan@epa.gov
Sent: Thursday, June 17, 2021 5:34 PM
To: Miller, GregoryG <Miller.Gregory@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: GenX RA

I was searching for the half life study on the web and I found this -- https://www.chemours.com/en/-/media/files/corporate/shea-toxicology-analysis-2018-04.pdf

Was is it? An academic RA that was picked up by Chemours?

Sue

Appointment

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 7/2/2021 1:20:06 PM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]
CC: Miller, GregoryG [Miller.Gregory@epa.gov]

Subject: GenX discusssion
Location: Microsoft Teams Meeting

Start: 7/6/2021 4:00:00 PM
End: 7/6/2021 4:30:00 PM
Show Time As: Tentative

Required Attendees: Behl, Betsy; Jacobs, Brittany
Optional Attendees: Miller, GregoryG

Agenda:

1) OLEM Hazardous substance listing timeline vs. GenX timeline
2) Half life human data – ORD analysis; peer review vs. describe it without using it (use BW3/4)

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Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 7/2/2021 6:53:44 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: RE: $ discussion

OK

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Friday, July 2, 2021 11:29 AM
To: Euling, Susan <Euling.Susan@epa.gov>
Subject: RE: $ discussion

Hi Sue,

I think Tuesday afternoon will work. I can chat with Casey and Barbara by then.

Britt

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Friday, July 2, 2021 10:57 AM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: $ discussion

Hi Brittany,

I'm going to set up a mtg for us to discuss the budget (PFOA/S and GenX and DBP funding needs). Do you think Tues is OK or will you need more time to gather the estimates? I wondered if you would need to discuss with others first…maybe Thurs?

Sue

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 7/6/2021 5:20:56 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]
Subject: RE: response needed before noon please PFAS talkers for a Michal speech

Thank you Brittany! Looks great!

I'm not understanding how this will inform levels in air since document derives RfD not RfC? Should that part be removed?

Sue

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Tuesday, July 6, 2021 1:00 PM
To: Behl, Betsy <Behl.Betsy@epa.gov>; Euling, Susan <Euling.Susan@epa.gov>
Subject: RE: response needed before noon please PFAS talkers for a Michal speech

Hi Betsy,

Attached our mine and Sue's combined edits to the talking point. It was easier to do it in word to track the changes. The top paragraph is our combined edits and then I put our individual edits below that paragraph.

Britt

From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Tuesday, July 6, 2021 10:27 AM
To: Euling, Susan <Euling.Susan@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: response needed before noon please PFAS talkers for a Michal speech

What do you think about the following as a talking point on GenX?

Ex. 5 Deliberative Process (DP)

From: Lalley, Cara <Lalley.Cara@epa.gov>
Sent: Tuesday, July 6, 2021 8:35 AM
To: Behl, Betsy <Behl.Betsy@epa.gov>
Subject: FW: I need some OW PFAS talkers for a Michal speech

From: Mathews, Cheyenne <Mathews.Cheyenne@epa.gov>
Sent: Tuesday, July 6, 2021 8:16 AM
To: Wirth, Karen <Wirth.Karen@epa.gov>; Lalley, Cara <Lalley.Cara@epa.gov>
Cc: Lippert, Allison <lippert.allison@epa.gov>
Subject: FW: I need some OW PFAS talkers for a Michal speech

Hi Karen and Cara, we've received a request for updated OW talking points to send to Michal for a speech on PFAS. This is what I currently have, but can you send me any updates on this by this afternoon, if there are any?

Thanks!

PFAS

Advance new science for PFAS risk assessment under Clean Water Act, SDWA, in monitoring in wastewater, fish tissue and biosolids, and control industrial discharges of PFAS under Clean Water Act

Ex. 5 Deliberative Process (DP)

From: Dunton, Cheryl <Dunton.Cheryl@epa.gov>
Sent: Tuesday, July 6, 2021 8:03 AM
To: Drinkard, Andrea <Drinkard.Andrea@epa.gov>
Cc: Mathews, Cheyenne <Mathews.Cheyenne@epa.gov>
Subject: RE: I need some OW PFAS talkers for a Michal speech

Thanks Andrea.

Cheyenne – Michal is talking about PFAS at an EWG event on July 14 and she wanted to include an update on any actions from OW. I've also reached out to OLEM to see if they have anything. Thanks.

From: Drinkard, Andrea <Drinkard.Andrea@epa.gov>
Sent: Tuesday, July 6, 2021 8:00 AM
To: Dunton, Cheryl <Dunton.Cheryl@epa.gov>
Cc: Mathews, Cheyenne <Mathews.Cheyenne@epa.gov>
Subject: Re: I need some OW PFAS talkers for a Michal speech

I'm adding Cheyenne.

On Jul 6, 2021, at 7:08 AM, Dunton, Cheryl <Dunton.Cheryl@epa.gov> wrote:

Who would be the best person to ask. Thanks.

Cheryl Dunton
Acting Deputy Division Director and Communications Director
Communication Services and Information Division
Office of Chemical Safety and Pollution Prevention
202-564-4893

Appointment

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 7/7/2021 4:00:06 AM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]

Subject: Accepted: GenX Check-Ins: Modeling Discussion
Location: Microsoft Teams Meeting

Start: 7/8/2021 6:00:00 PM
End: 7/8/2021 6:30:00 PM
Show Time As: Busy

Message

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 7/6/2021 4:37:50 PM
To: Jacobs, Brittany [Jacobs.Brittany@epa.gov]
Subject: FW: response needed before noon please PFAS talkers for a Michal speech

See my edits below

From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Tuesday, July 6, 2021 10:27 AM
To: Euling, Susan <Euling.Susan@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: response needed before noon please PFAS talkers for a Michal speech

What do you think about the following as a talking point on GenX?

Ex. 5 Deliberative Process (DP)

From: Lalley, Cara <Lalley.Cara@epa.gov>
Sent: Tuesday, July 6, 2021 8:35 AM
To: Behl, Betsy <Behl.Betsy@epa.gov>
Subject: FW: I need some OW PFAS talkers for a Michal speech

From: Mathews, Cheyenne <Mathews.Cheyenne@epa.gov>
Sent: Tuesday, July 6, 2021 8:16 AM
To: Wirth, Karen <Wirth.Karen@epa.gov>; Lalley, Cara <Lalley.Cara@epa.gov>
Cc: Lippert, Allison <lippert.allison@epa.gov>
Subject: FW: I need some OW PFAS talkers for a Michal speech

Hi Karen and Cara, we've received a request for updated OW talking points to send to Michal for a speech on PFAS. This is what I currently have, but can you send me any updates on this by this afternoon, if there are any?

Thanks!

PFAS

Advance new science for PFAS risk assessment under Clean Water Act, SDWA, in monitoring in wastewater, fish tissue and biosolids, and control industrial discharges of PFAS under Clean Water Act

Ex. 5 Deliberative Process (DP)

From: Dunton, Cheryl <Dunton.Cheryl@epa.gov>
Sent: Tuesday, July 6, 2021 8:03 AM
To: Drinkard, Andrea <Drinkard.Andrea@epa.gov>
Cc: Mathews, Cheyenne <Mathews.Cheyenne@epa.gov>
Subject: RE: I need some OW PFAS talkers for a Michal speech

Thanks Andrea.

Cheyenne – Michal is talking about PFAS at an EWG event on July 14 and she wanted to include an update on any actions from OW. I've also reached out to OLEM to see if they have anything. Thanks.

From: Drinkard, Andrea <Drinkard.Andrea@epa.gov>
Sent: Tuesday, July 6, 2021 8:00 AM
To: Dunton, Cheryl <Dunton.Cheryl@epa.gov>
Cc: Mathews, Cheyenne <Mathews.Cheyenne@epa.gov>
Subject: Re: I need some OW PFAS talkers for a Michal speech

I'm adding Cheyenne.

> On Jul 6, 2021, at 7:08 AM, Dunton, Cheryl <Dunton.Cheryl@epa.gov> wrote:
>
> Who would be the best person to ask. Thanks.
>
> Cheryl Dunton
> Acting Deputy Division Director and Communications Director
> Communication Services and Information Division
> Office of Chemical Safety and Pollution Prevention
> 202-564-4893

Appointment

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 6/8/2021 4:47:51 PM
To: Thayer, Kris [thayer.kris@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]
CC: Kraft, Andrew [Kraft.Andrew@epa.gov]; Shams, Dahnish [Shams.Dahnish@epa.gov]; Soto, Vicki [Soto.Vicki@epa.gov]

Subject: Part 1 and 2: GenX SR/study qual eval discussion
Attachments: DRAFT GenX Chemicals Toxicity Assessment_2.4.21 CLEAN.docx
Location: Microsoft Teams Meeting

Start: 6/9/2021 12:30:00 PM
End: 6/9/2021 1:00:00 PM
Show Time As: Tentative

Recurrence: Weekly
every Wednesday from 8:30 AM to 9:00 AM
Required Attendees: Thayer, Kris; Miller, GregoryG; Jacobs, Brittany
Optional Attendees: Kraft, Andrew; Shams, Dahnish; Soto, Vicki

The 6/9 meeting will allow OST to introduce the issue; the 6/16 mtg will allow for ORD to provide recommendations.

Hi Kris,

We met with Samantha, Andrew, and Dahnish last week to discuss next steps to finalize GenX. Samantha offered your expert assistance on surgically revising the GenX study qual eval description (currently a mix of OPPT and IRIS)…with minimal effort and maximum justification!

The peer review draft is attached – we are revising based on peer review comments now so please do not share.

We really appreciate your assistance.

Thanks,
Sue

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Appointment

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 6/8/2021 5:42:54 PM
To: Thayer, Kris [thayer.kris@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]
CC: Kraft, Andrew [Kraft.Andrew@epa.gov]; Shams, Dahnish [Shams.Dahnish@epa.gov]; Soto, Vicki [Soto.Vicki@epa.gov]

Subject: Part 1: GenX SR/study qual eval discussion
Attachments: DRAFT GenX Chemicals Toxicity Assessment_2.4.21 CLEAN.docx
Location: Microsoft Teams Meeting

Start: 6/10/2021 4:00:00 PM
End: 6/10/2021 4:30:00 PM
Show Time As: Tentative

Required Attendees: Thayer, Kris; Miller, GregoryG; Jacobs, Brittany
Optional Attendees: Kraft, Andrew; Shams, Dahnish; Soto, Vicki

Moving due to folks' availability.

Hi Kris,

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Appointment

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 6/8/2021 4:46:57 PM
To: Thayer, Kris [thayer.kris@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]
CC: Kraft, Andrew [Kraft.Andrew@epa.gov]; Shams, Dahnish [Shams.Dahnish@epa.gov]; Soto, Vicki [Soto.Vicki@epa.gov]

Subject: Part 1: GenX SR/study qual eval discussion
Attachments: DRAFT GenX Chemicals Toxicity Assessment_2.4.21 CLEAN.docx
Location: Microsoft Teams Meeting

Start: 6/9/2021 12:30:00 PM
End: 6/9/2021 1:00:00 PM
Show Time As: Tentative

Required Attendees: Thayer, Kris; Miller, GregoryG; Jacobs, Brittany
Optional Attendees: Kraft, Andrew; Shams, Dahnish; Soto, Vicki

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Appointment

From: Euling, Susan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CB0873315ED244FA852DF546E1191E4C-EULING, SUSAN]
Sent: 6/8/2021 7:21:33 PM
To: Thayer, Kris [thayer.kris@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]; Jacobs, Brittany [Jacobs.Brittany@epa.gov]
CC: Kraft, Andrew [Kraft.Andrew@epa.gov]; Shams, Dahnish [Shams.Dahnish@epa.gov]; Soto, Vicki [Soto.Vicki@epa.gov]

Subject: Part 1: GenX SR/study qual eval discussion
Attachments: DRAFT GenX Chemicals Toxicity Assessment_2.4.21 CLEAN.docx
Location: Microsoft Teams Meeting

Start: 6/10/2021 3:30:00 PM
End: 6/10/2021 4:00:00 PM
Show Time As: Tentative

Required Attendees: Thayer, Kris; Miller, GregoryG; Jacobs, Brittany
Optional Attendees: Kraft, Andrew; Shams, Dahnish; Soto, Vicki

Moving due to folks' availability.

Hi Kris,

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Sue

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Appointment

From: Behl, Betsy [Behl.Betsy@epa.gov]
Sent: 7/9/2021 4:58:46 PM
To: Euling, Susan [Euling.Susan@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]

Subject: genX schedule more thoughts
Location: Microsoft Teams Meeting

Start: 7/9/2021 5:00:00 PM
End: 7/9/2021 5:30:00 PM
Show Time As: Tentative

Required Attendees: Euling, Susan; Miller, GregoryG; Brittany Jacobs

GenX chemicals tox assessment SCHEDULE 070621 BB sye bbedits.docx

Sharing this document. We can talk more on Monday, but I had some additional thoughts on how to streamline and decisions I cant make

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Appointment

From: Snowden, Belinda [snowden.belinda@epa.gov]
Sent: 7/12/2021 3:39:30 PM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Wood, Robert [Wood.Robert@epa.gov]; Euling, Susan [Euling.Susan@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]

Subject: Proposed GenX schedule
Location: Microsoft Teams Meeting

Start: 7/13/2021 12:30:00 PM
End: 7/13/2021 1:00:00 PM
Show Time As: Tentative

Required Attendees: Betsy Behl; Robert Wood; Euling, Susan; Jacobs, Brittany; Miller, GregoryG

<!--[if lte mso 15 || CheckWebRef]-->

Snowden, Belinda has shared a OneDrive for Business file with you. To view it, click the link below.

GenX chemicals tox assessment SCHEDULE 071221.docx

<!--[endif]-->

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Appointment

From: Behl, Betsy [Behl.Betsy@epa.gov]
Sent: 7/9/2021 7:18:36 PM
To: Euling, Susan [Euling.Susan@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]

Subject: discuss GenX schedule
Location: Microsoft Teams Meeting

Start: 7/12/2021 2:00:00 PM
End: 7/12/2021 2:30:00 PM
Show Time As: Tentative

Required Attendees: Euling, Susan; Jacobs, Brittany; Miller, GregoryG

<!--[if lte mso 15 || CheckWebRef]-->

Behl, Betsy has shared a OneDrive for Business file with you. To view it, click the link below.

GenX chemicals tox assessment SCHEDULE 070621 BB sye bbedits.docx

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Message

From: Cunningham, Kelly [cunningham.kelly@epa.gov]
Sent: 7/13/2021 2:29:26 PM
To: Jacobs, Brittany [jacobs.brittany@epa.gov]; Euling, Susan [Euling.Susan@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]; Lindberg, Casey [Lindberg.Casey@epa.gov]
Subject: RE: Quick review - not much work: IMPORTANT: Prep for GAO Entrance Conference: PFAS Contamination

Yes, I agree with Brittany. In addition, ATSDR has MRLs for PFOS/PFOS but they appear to be based on intermediate exposure. There are also several countries (as identified by the ITRC) that have established standards. Not sure if we want to include either of these.

Kelly

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Tuesday, July 13, 2021 9:59 AM
To: Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>; Lindberg, Casey <Lindberg.Casey@epa.gov>; Cunningham, Kelly <cunningham.kelly@epa.gov>
Subject: RE: Quick review - not much work: IMPORTANT: Prep for GAO Entrance Conference: PFAS Contamination

I would note that Kelly's table tracks all of the available state regulations, not just the ones that deviate from our PFOA/PFOS HA numbers.

I think the response to number 2 is good. Go directly to the source.

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Tuesday, July 13, 2021 9:55 AM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>; Lindberg, Casey <Lindberg.Casey@epa.gov>; Cunningham, Kelly <cunningham.kelly@epa.gov>
Subject: Quick review - not much work: IMPORTANT: Prep for GAO Entrance Conference: PFAS Contamination
Importance: High

Hi All,

You saw Erica's email about how Q2 was an overview question with no response needed. Who knew? But Q9 is similar to Q2 so I shortened your writeup as follows:

Q9. Does EPA track or maintain any data on individual state's efforts to regulate PFAS?

Ex. 5 Deliberative Process (DP)

Are there other organizations (beyond ITRC) you suggest we contact for such information?
Any additional questions about state drinking water levels, rationales, and processes should be directed to the individual state.

Do you have an additional response to the 2nd part of the question about organizations (see above)?

Thanks,
Sue

From: Euling, Susan
Sent: Tuesday, July 13, 2021 9:47 AM
To: Behl, Betsy <Behl.Betsy@epa.gov>
Subject: FW: IMPORTANT: Prep for GAO Entrance Conference: PFAS Contamination
Importance: High

For GAO's Question 9, I revised part of the response to the overarching Q2 (now not needed) to this – I added "informally" because we don't have a formal tracking system. If you prefer, we could say "following the development…"

Ex. 5 Deliberative Process (DP)

From: Weyer, Erica <weyer.erica@epa.gov>
Sent: Tuesday, July 13, 2021 9:12 AM
To: Euling, Susan <Euling.Susan@epa.gov>; Behl, Betsy <Behl.Betsy@epa.gov>
Cc: Miller, GregoryG <Miller.Gregory@epa.gov>; Lindberg, Casey <Lindberg.Casey@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>; Flaherty, Colleen <Flaherty.Colleen@epa.gov>; Barash, Shari <Barash.Shari@epa.gov>; Reed, Khesha <Reed.Khesha@epa.gov>; Martinez, Menchu <martinez.menchu-c@epa.gov>
Subject: IMPORTANT: Prep for GAO Entrance Conference: PFAS Contamination

Hi all,

Update on this:

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Friday, July 9, 2021 4:16 PM
To: Weyer, Erica <weyer.erica@epa.gov>; Behl, Betsy <Behl.Betsy@epa.gov>
Cc: Miller, GregoryG <Miller.Gregory@epa.gov>; Lindberg, Casey <Lindberg.Casey@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>; Flaherty, Colleen <Flaherty.Colleen@epa.gov>; Barash, Shari <Barash.Shari@epa.gov>; Reed, Khesha <Reed.Khesha@epa.gov>; Martinez, Menchu <martinez.menchu-c@epa.gov>
Subject: RE: Prep for GAO Entrance Conference: PFAS Contamination

This is the PFAS and States question in the latest version that you sent:

#9 Does EPA track or maintain any data on individual state's efforts to regulate PFAS?

Ex. 5 Deliberative Process (DP)

Thanks for clarifying.

Sue

From: Weyer, Erica <weyer.erica@epa.gov>
Sent: Friday, July 9, 2021 2:31 PM
To: Behl, Betsy <Behl.Betsy@epa.gov>
Cc: Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>; Lindberg, Casey <Lindberg.Casey@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>; Flaherty, Colleen <Flaherty.Colleen@epa.gov>; Barash, Shari <Barash.Shari@epa.gov>; Reed, Khesha <Reed.Khesha@epa.gov>; Martinez, Menchu <martinez.menchu-c@epa.gov>
Subject: RE: Prep for GAO Entrance Conference: PFAS Contamination

+ Shari, Menchu and Khesha – please let me know if I need to have them added to the meetings on Tuesday and Thursday next week.

From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Friday, July 9, 2021 2:27 PM
To: Weyer, Erica <weyer.erica@epa.gov>
Cc: Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>; Lindberg, Casey <Lindberg.Casey@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>; Flaherty, Colleen <Flaherty.Colleen@epa.gov>
Subject: RE: Prep for GAO Entrance Conference: PFAS Contamination

Erica, the only question relevant to OST is #8:

Ex. 5 Deliberative Process (DP)

We put a similar item in the PFAS action plan. SHPD may want to add something about fish advisories.

From: Weyer, Erica <weyer.erica@epa.gov>
Sent: Friday, July 9, 2021 1:42 PM
To: Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>; Lindberg, Casey <Lindberg.Casey@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Cc: Behl, Betsy <Behl.Betsy@epa.gov>; Flaherty, Colleen <Flaherty.Colleen@epa.gov>
Subject: FW: Prep for GAO Entrance Conference: PFAS Contamination

All – please see below and let me know your thoughts. I know a lot of this is OGWDW.

From: Crawford, Tiffany <Crawford.Tiffany@epa.gov>
Sent: Friday, July 9, 2021 1:32 PM
To: Wirth, Karen <Wirth.Karen@epa.gov>; Weyer, Erica <weyer.erica@epa.gov>; Schafer, Zach <Schafer.Zach@epa.gov>
Cc: Lousberg, Macara <Lousberg.Macara@epa.gov>; Tiago, Joseph <Tiago.Joseph@epa.gov>; Ruf, Christine <Ruf.Christine@epa.gov>; Spraul, Greg <Spraul.Greg@epa.gov>
Subject: Prep for GAO Entrance Conference: PFAS Contamination

Hello Everyone,

Yesterday, I circulated the questions GAO has prepared for verbal feedback from EPA subject matter experts during the upcoming entrance conference on July 15th (attached). I know a few of you have reviewed the questions and provided some initial reaction on the scope of GAO's inquiry.

Understanding the scope is beyond activities in the Office of Water, I understand a majority of the questions may fit in our wheelhouse. Please take a look at the questions attached, and let me know which are most appropriate for OW to take the lead in responding to versus another office like OCSPP, OLEM, ORD, or OA.
Thank you for your help,

Tiffany N. Crawford
US Environmental Protection Agency
Office of Water

Other Contact Information:
Email: Crawford.Tiffany@epa.gov
Office: (202) 566-2375

Message

From: Behl, Betsy [Behl.Betsy@epa.gov]
Sent: 7/13/2021 3:03:21 PM
To: Euling, Susan [Euling.Susan@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: GENx SCHEDULE
Attachments: GenX chemicals tox assessment SCHEDULE 071221.docx

Added details sent by Brittany on prior outreach

Elizabeth (Betsy) Behl, Director Health and Ecological Criteria Division,
Office of Science and Technology, Office of Water, EPA
Office: 202-566-0788
Cell: Ex. 6 Personal Privacy (PP)

Message

From: Behl, Betsy [Behl.Betsy@epa.gov]
Sent: 7/21/2021 10:41:42 PM
To: Euling, Susan [Euling.Susan@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: the latest thoughts on GENX schedule
Attachments: GenX chemicals tox assessment SCHEDULE 072121.docx

Ex. 5 Deliberative Process (DP)

Feedback appreciated

Message

From: Behl, Betsy [Behl.Betsy@epa.gov]
Sent: 7/26/2021 1:46:47 PM
To: Jacobs, Brittany [jacobs.brittany@epa.gov]; Euling, Susan [Euling.Susan@epa.gov]
CC: Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: RE: Full Chemours Worker Study Attached

Awesome!

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Monday, July 26, 2021 9:36 AM
To: Behl, Betsy <Behl.Betsy@epa.gov>; Euling, Susan <Euling.Susan@epa.gov>
Cc: Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: Full Chemours Worker Study Attached

Great, I think that will definitely speed things up! Sue, as we discussed last week, I am aiming to get you the draft by the end of the week. Shooting for Thursday but may need until Friday morning. I will give you both a heads-up on Wednesday when to expect it. The document is in track changes so you will be able to see what has changed. I will wait to do a clean version until after your reviews. I will also be sending the Response to 2nd Peer Review.

From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Monday, July 26, 2021 9:29 AM
To: Euling, Susan <Euling.Susan@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Cc: Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: Full Chemours Worker Study Attached

Looking forward to this! A marked up version would be really helpful. I am fine reviewing simultaneously with Sue.

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Monday, July 26, 2021 9:25 AM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>; Behl, Betsy <Behl.Betsy@epa.gov>
Cc: Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: Full Chemours Worker Study Attached

Hi Brittany,

Do you know when the GenX draft will be sent for my review? The more of a heads up I can get the better since I will likely need to carve out an evening to review it. Also, if you want Betsy and me to review at the same time that could speed things up too. Could you flag the sections where changes were made (track changes ver plus clean ver would work)?

Thanks,

Sue

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Friday, July 23, 2021 2:00 PM
To: Behl, Betsy <Behl.Betsy@epa.gov>

Cc: Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: Full Chemours Worker Study Attached

Hi Betsy,

Ex. 5 Deliberative Process (DP)

Thanks!
Britt

From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Thursday, June 17, 2021 6:16 PM
To: Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: Fwd: Full Chemours Worker Study Attached

Ex. 5 Deliberative Process (DP)

But I still think we should move ahead and characterize.

Sent from my iPhone

Begin forwarded message:

> **From:** "Henry, Tala" <Henry.Tala@epa.gov>
> **Date:** June 17, 2021 at 5:00:35 PM EDT
> **To:** "Behl, Betsy" <Behl.Betsy@epa.gov>
> **Cc:** "Euling, Susan" <Euling.Susan@epa.gov>
> **Subject: RE: Full Chemours Worker Study Attached**
>
> The conclusions are in the separate TSCA submission.
>
> Tala R. Henry, Ph.D.
> Deputy Director
> Office of Pollution Prevention & Toxics
>
> T: 202-564-2959
> E: henry.tala@epa.gov
>
> ---
>
> **From:** Behl, Betsy <Behl.Betsy@epa.gov>
> **Sent:** Thursday, June 17, 2021 4:38 PM
> **To:** Henry, Tala <Henry.Tala@epa.gov>
> **Cc:** Euling, Susan <Euling.Susan@epa.gov>
> **Subject:** RE: Full Chemours Worker Study Attached

Ex. 5 Deliberative Process (DP)

Elizabeth (Betsy) Behl, Director Health and Ecological Criteria Division,
Office of Science and Technology, Office of Water, EPA
Office: 202-566-0788
Cell: Ex. 6 Personal Privacy (PP)

From: Henry, Tala <Henry.Tala@epa.gov>
Sent: Thursday, June 17, 2021 8:24 AM
To: Behl, Betsy <Behl.Betsy@epa.gov>
Cc: Henry, Tala <Henry.Tala@epa.gov>
Subject: Full Chemours Worker Study Attached
Importance: High

This is it…11 pages. No CBI (but the consent form appears to be in Dutch!)

Message

From: Behl, Betsy [Behl.Betsy@epa.gov]
Sent: 7/26/2021 4:32:02 PM
To: Euling, Susan [Euling.Susan@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: MI contacts

Eric Wildfang (wildfange@michigan.gov)) DOE toxicologist
Jennifer Gray (Grayj@michigan.gov) HHS toxicologist

Region 5 PFAS coordinator: Kimberly Harris 312-886-4239 (Harris.kimberly@epa.gov)

I spoke with both Eric and Jennifer on Friday about setting up a discussion after our briefing with Radhika, Apparently they don't have detections of GenX in MI, but put the standard in place because the tox data were available. I think it is a final value in MI. I haven't been able to get in contact with Kimberly.

Sending so you have the contacts

Message

From: Behl, Betsy [Behl.Betsy@epa.gov]
Sent: 7/29/2021 1:41:42 PM
To: Euling, Susan [Euling.Susan@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]; Flaherty, Colleen [Flaherty.Colleen@epa.gov]
Subject: GenX notes from OST biweekly

Radhika did not attend but we had a good conversation with Benita and Zach.

Ex. 5 Deliberative Process (DP)

Elizabeth (Betsy) Behl, Director Health and Ecological Criteria Division,
Office of Science and Technology, Office of Water, EPA
Office: 202-566-0788
Cell: Ex. 6 Personal Privacy (PP)

Appointment

From: Snowden, Belinda [snowden.belinda@epa.gov]
Sent: 7/28/2021 6:19:33 PM
To: Jacobs, Brittany [jacobs.brittany@epa.gov]; Euling, Susan [Euling.Susan@epa.gov]; Cassidy, Meghan [Cassidy.Meghan@epa.gov]; DAgostino, Daniel [DAgostino.Daniel@epa.gov]; Rogers, Rick [rogers.rick@epa.gov]; Jones, Aaryn [Jones.Aaryn@epa.gov]; Harris, Kimberly [harris.kimberly@epa.gov]; Morton, Michael [Morton.Michael@epa.gov]; Wooster-Brown, Catherine [Wooster-Brown.Catherine@epa.gov]; Bahrman, Sarah [Bahrman.Sarah@epa.gov]; Small, Matthew [Small.Matthew@epa.gov]; Szerlog, Michael [Szerlog.Michael@epa.gov]

Subject: Status of State efforts to establish guidelines for GenX chemicals
Location: Microsoft Teams Meeting

Start: 8/2/2021 4:30:00 PM
End: 8/2/2021 5:00:00 PM
Show Time As: Tentative

Required Attendees: Jacobs, Brittany; Euling, Susan; Cassidy, Meghan; DAgostino, Daniel; Rogers, Rick; Jones, Aaryn; Harris, Kimberly; Morton, Michael; Wooster-Brown, Catherine; Bahrman, Sarah; Small, Matthew; Szerlog, Michael

<!--[if lte mso 15 || CheckWebRef]-->

Snowden, Belinda has shared a OneDrive for Business file with you. To view it, click the link below.

State values for GenX.docx

<!--[endif]-->

We are approaching the final stages of development of the GenX toxicity values and would like to get an understand of which states and tribes may have developed or are in the process of developing standards for GenX chemicals in drinking water, It would also be helpful to know if states are monitoring for these chemicals. We are aware of a few states (e.g. North Carolina and Michigan) that are active in this area but realize this is a dynamic situation. Please add to the attached table if you can providing contact information for each state and where available a link to the guideline for GenX in drinking water. We will extract the information into the last column.

Thanks for your help,

Microsoft Teams meeting

Join on your computer or mobile app
Click here to join the meeting

Or call in (audio only)

Ex. 6 Personal Privacy (PP)

es, Washington DC

By participating in EPA hosted virtual meetings and events, you are consenting to abide by the agency's terms of use. In addition, you acknowledge that content you post may be collected and used in support of FOIA and eDiscovery activities.

Learn More | Meeting options

Message

From: Behl, Betsy [Behl.Betsy@epa.gov]
Sent: 7/29/2021 6:28:41 PM
To: Jacobs, Brittany [jacobs.brittany@epa.gov]; Euling, Susan [Euling.Susan@epa.gov]
CC: Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: RE: Full Chemours Worker Study Attached

FANTASTIC. Wonderful news Brittany. I really appreciate your diligent work on this, as you juggle many other things

---

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Wednesday, July 28, 2021 9:35 PM
To: Behl, Betsy <Behl.Betsy@epa.gov>; Euling, Susan <Euling.Susan@epa.gov>
Cc: Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: Full Chemours Worker Study Attached

Hello,

I wanted to give a heads up that I think you can expect the GenX assessment and response to peer review Friday morning. Working hard but will likely need all of tomorrow to get it in good shape.

Thanks,
Britt

From: Jacobs, Brittany
Sent: Monday, July 26, 2021 9:36 AM
To: Behl, Betsy <Behl.Betsy@epa.gov>; Euling, Susan <Euling.Susan@epa.gov>
Cc: Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: Full Chemours Worker Study Attached

Great, I think that will definitely speed things up! Sue, as we discussed last week, I am aiming to get you the draft by the end of the week. Shooting for Thursday but may need until Friday morning. I will give you both a heads-up on Wednesday when to expect it. The document is in track changes so you will be able to see what has changed. I will wait to do a clean version until after your reviews. I will also be sending the Response to 2nd Peer Review.

From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Monday, July 26, 2021 9:29 AM
To: Euling, Susan <Euling.Susan@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Cc: Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: Full Chemours Worker Study Attached

Looking forward to this! A marked up version would be really helpful. I am fine reviewing simultaneously with Sue.

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Monday, July 26, 2021 9:25 AM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>; Behl, Betsy <Behl.Betsy@epa.gov>
Cc: Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: Full Chemours Worker Study Attached

Hi Brittany,

Do you know when the GenX draft will be sent for my review? The more of a heads up I can get the better since I will likely need to carve out an evening to review it. Also, if you want Betsy and me to review at the same time that could speed things up too. Could you flag the sections where changes were made (track changes ver plus clean ver would work)?

Thanks,

Sue

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Friday, July 23, 2021 2:00 PM
To: Behl, Betsy <Behl.Betsy@epa.gov>
Cc: Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: Full Chemours Worker Study Attached

Hi Betsy,

Can you confirm with Tala that it is okay to put the worker's study data and the Chemours letter we received from her up on HERO as the source for the human half life data? I know we chatted about this before but thought it was worth double checking before I reached out to HERO. I can always just cite back to ECHA if we need to, but we all thought it would be good to have all of the information publicly available to demonstrate why we wouldn't be using the human number in the calculation of the RfD.

Thanks!
Britt

From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Thursday, June 17, 2021 6:16 PM
To: Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: Fwd: Full Chemours Worker Study Attached

Ex. 5 Deliberative Process (DP)

good to know.

But I still think we should move ahead and characterize.

Sent from my iPhone

Begin forwarded message:

> **From:** "Henry, Tala" <Henry.Tala@epa.gov>
> **Date:** June 17, 2021 at 5:00:35 PM EDT
> **To:** "Behl, Betsy" <Behl.Betsy@epa.gov>
> **Cc:** "Euling, Susan" <Euling.Susan@epa.gov>
> **Subject: RE: Full Chemours Worker Study Attached**

The conclusions are in the separate TSCA submission.

Tala R. Henry, Ph.D.
Deputy Director
Office of Pollution Prevention & Toxics

T: 202-564-2959
E: henry.tala@epa.gov

From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Thursday, June 17, 2021 4:38 PM
To: Henry, Tala <Henry.Tala@epa.gov>
Cc: Euling, Susan <Euling.Susan@epa.gov>
Subject: RE: Full Chemours Worker Study Attached

Ex. 5 Deliberative Process (DP)

Elizabeth (Betsy) Behl, Director Health and Ecological Criteria Division,
Office of Science and Technology, Office of Water, EPA
Office: 202-566-0788
Cell: Ex. 6 Personal Privacy (PP)

From: Henry, Tala <Henry.Tala@epa.gov>
Sent: Thursday, June 17, 2021 8:24 AM
To: Behl, Betsy <Behl.Betsy@epa.gov>
Cc: Henry, Tala <Henry.Tala@epa.gov>
Subject: Full Chemours Worker Study Attached
Importance: High

This is it…11 pages. No CBI (but the consent form appears to be in Dutch!)

Message

From: Behl, Betsy [Behl.Betsy@epa.gov]
Sent: 7/30/2021 6:34:50 PM
To: Jacobs, Brittany [jacobs.brittany@epa.gov]; Euling, Susan [Euling.Susan@epa.gov]
CC: Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: RE: GenX Final Assessment and Response to Second Peer Review for your review

Many thanks Brittany. Very happy to have this. CONGRATULATIONS!!

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Friday, July 30, 2021 9:43 AM
To: Behl, Betsy <Behl.Betsy@epa.gov>; Euling, Susan <Euling.Susan@epa.gov>
Cc: Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: GenX Final Assessment and Response to Second Peer Review for your review
Importance: High

Good Morning,

I'm extremely happy to send you the GenX final assessment and response to the second peer review for your review. I am attaching them as links since there are multiple reviewers. The assessment is in track changes so you can see what has changed since the second peer review. Note we will need a tech edit on these documents and I have call outs to Tetra Tech for the tech edit in comment bubbles.

Highlighted below are the sections where most of the editing was done in the assessment if you want to focus your review:

- Ex. 5 Deliberative Process (DP)

There weren't too many responses needed in the response to peer review comments, but the comments needing responses were pretty meaty. I realized that I need to double check the response to public comment document and update according to the changes I made in the assessment. For example, I know the response to the comments on the systematic review need to change. I will do that once I get your comments back on these documents.

Let me know if you have any questions. I look forward to your edits and feedback!

All the best,
Brittany

Message

From: Behl, Betsy [Behl.Betsy@epa.gov]
Sent: 8/4/2021 5:56:36 PM
To: Euling, Susan [Euling.Susan@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]
CC: Miller, GregoryG [Miller.Gregory@epa.gov]; Flaherty, Colleen [Flaherty.Colleen@epa.gov]
Subject: RE: FYI: ATSDR GenX inquiry

That is interesting. Thanks. The water sampling is interesting. The lack of detects in dust etc will be interesting when considering a RSC.

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Wednesday, August 4, 2021 11:07 AM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>
Cc: Miller, GregoryG <Miller.Gregory@epa.gov>; Behl, Betsy <Behl.Betsy@epa.gov>
Subject: FYI: ATSDR GenX inquiry

Some interesting information from Melanie Busey (at ATSDR) via Barbara who is the contact with ATSDDR:

I reached out to some colleagues on any monitoring activities ATSDR has planned for GenX:

Ex. 5 Deliberative Process (DP)

Message

From: Behl, Betsy [Behl.Betsy@epa.gov]
Sent: 8/6/2021 10:56:06 PM
To: Jacobs, Brittany [jacobs.brittany@epa.gov]; Euling, Susan [Euling.Susan@epa.gov]
CC: Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: RE: GenX Final Assessment and Response to Second Peer Review for your review

No comments from me. I will leave that up to Sue. Very exciting.

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Friday, August 6, 2021 11:41 AM
To: Behl, Betsy <Behl.Betsy@epa.gov>; Euling, Susan <Euling.Susan@epa.gov>
Cc: Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: GenX Final Assessment and Response to Second Peer Review for your review
Importance: High

Great! Thanks to you both for your review and helpful edits. I have gone back through and addressed comments. Sue, look at the very last section of the assessment (8.8) for updates to susceptible populations based on our conversation this morning. If you both are satisfied with the responses/edits, I can get the documents cleaned up for Deborah's review. I would like to keep the comment bubbles specific for the Tech Edit so Deborah knows there is still some work to be done to make the documents pretty and doesn't spend time calling out formatting, etc issues. Let me know!

From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Thursday, August 5, 2021 7:07 PM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>; Euling, Susan <Euling.Susan@epa.gov>
Cc: Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: GenX Final Assessment and Response to Second Peer Review for your review

One small comment on the response to comments. Awesome. I will give you a call tomorrow to see if you had any questions , otherwise, lets get it to Deborah next week!

Congratulations. It was a pleasure to read the peer reviewer comments after all we went through.

B

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Friday, July 30, 2021 9:43 AM
To: Behl, Betsy <Behl.Betsy@epa.gov>; Euling, Susan <Euling.Susan@epa.gov>
Cc: Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: GenX Final Assessment and Response to Second Peer Review for your review
Importance: High

Good Morning,

I'm extremely happy to send you the GenX final assessment and response to the second peer review for your review. I am attaching them as links since there are multiple reviewers. The assessment is in track changes so you can see what has changed since the second peer review. Note we will need a tech edit on these documents and I have call outs to Tetra Tech for the tech edit in comment bubbles.

Highlighted below are the sections where most of the editing was done in the assessment if you want to focus your review:

- Ex. 5 Deliberative Process (DP)

There weren't too many responses needed in the response to peer review comments, but the comments needing responses were pretty meaty. I realized that I need to double check the response to public comment document and update according to the changes I made in the assessment. For example, I know the response to the comments on the systematic review need to change. I will do that once I get your comments back on these documents.

Let me know if you have any questions. I look forward to your edits and feedback!

All the best,
Brittany

Message

From: Akhter, Shamima [Akhter.Shamima@epa.gov]
Sent: 8/9/2021 7:00:57 PM
To: Euling, Susan [Euling.Susan@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]
Subject: RE: TD for Tetra Tech on the GenX chemicals assessment and 2nd response to peer review

I have provided a heads up to TT about these tasks last month and they are aware of it. I just had a call with TT for FSTRAC activities and mentioned to them again about upcoming documents for tech editing.

I would set up a call with TT and EPA when docs are ready to send. But I'll forward your TDs to TT soon.

Thanks,
Shamima

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Monday, August 9, 2021 2:35 PM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>; Akhter, Shamima <Akhter.Shamima@epa.gov>
Subject: RE: TD for Tetra Tech on the GenX chemicals assessment and 2nd response to peer review

Yes that is correct. I'll leave it up to Shamima to decide whether she provides a heads up (without a mtg right now) to TT, schedules a meeting for perhaps for 2 weeks from now with TT?, or waits for the clearance of the doc to hold the meeting. Please advise.

Sue

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Monday, August 9, 2021 2:33 PM
To: Akhter, Shamima <Akhter.Shamima@epa.gov>
Cc: Euling, Susan <Euling.Susan@epa.gov>
Subject: RE: TD for Tetra Tech on the GenX chemicals assessment and 2nd response to peer review

Hi Shamima,

Sue, correct me if I'm wrong, but I didn't think we wanted to pass the documents along yet. Shamima, I think the goal is to mostly give Tetra Tech a heads up that this will be coming sometime soon (maybe end of August – mid September) and maybe share the technical direction so they had a sense of what needs to be done. We can save the call until the documents are ready if that's what you think is best.

Thanks!
Britt

From: Akhter, Shamima <Akhter.Shamima@epa.gov>
Sent: Monday, August 9, 2021 1:49 PM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>
Cc: Euling, Susan <Euling.Susan@epa.gov>
Subject: RE: TD for Tetra Tech on the GenX chemicals assessment and 2nd response to peer review

Hi Brittany,

I only found TDs not the docs. Please send me two docs that you've mentioned in the TDs. I would remove your cost estimate from the TD before I send to TT (we don't provide our estimate to the contractor rather we ask contractor to provide estimate based on TDs).

Once I send all files to TT, I'll set up a call. Please let me know who do you want to be on the call from EPA end?

Thanks,
Shamima

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Monday, August 9, 2021 1:37 PM
To: Akhter, Shamima <Akhter.Shamima@epa.gov>
Cc: Euling, Susan <Euling.Susan@epa.gov>
Subject: TD for Tetra Tech on the GenX chemicals assessment and 2nd response to peer review

Hi Shamima,

Attached is technical direction for Tetra Tech on the technical edit on the GenX chemicals assessment and 2nd response to peer review document. Let me know if you have any questions. I think a meeting would be good to discuss what we know about the schedule and to see if they have any follow up questions.

Thanks for your help on this,
Britt

Message

From: Flaherty, Colleen [Flaherty.Colleen@epa.gov]
Sent: 8/12/2021 1:56:31 PM
To: Euling, Susan [Euling.Susan@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]
Subject: RE: Response May be Required....Follow-up to our Workgroup Meeting/Option Selection

I have not had further discussions with OLEM but I missed the meeting yesterday because I was at the dentist. Let me see if Michelle Schutz has a few minutes to discuss.

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Thursday, August 12, 2021 9:55 AM
To: Flaherty, Colleen <Flaherty.Colleen@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>; Behl, Betsy <Behl.Betsy@epa.gov>
Subject: RE: Response May be Required....Follow-up to our Workgroup Meeting/Option Selection

Betsy and Colleen,

Ex. 5 Deliberative Process (DP)

Sue

From: Flaherty, Colleen <Flaherty.Colleen@epa.gov>
Sent: Thursday, August 12, 2021 9:23 AM
To: Euling, Susan <Euling.Susan@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>; Behl, Betsy <Behl.Betsy@epa.gov>
Subject: FW: Response May be Required....Follow-up to our Workgroup Meeting/Option Selection

Ex. 5 Deliberative Process (DP)

From: Schutz, Michelle <Schutz.Michelle@epa.gov>
Sent: Thursday, August 12, 2021 9:21 AM
To: Brinkerhoff, Chris <Brinkerhoff.Chris@epa.gov>; Shah, Manthan <shah.manthan@epa.gov>; Wolf, Joel <Wolf.Joel@epa.gov>; Welbourn, Brandon <Welbourn.Brandon@epa.gov>; Freed, Elisabeth <Freed.Elisabeth@epa.gov>; Azad, Ava <Azad.Ava@epa.gov>; Schlafstein, Jessica <Schlafstein.Jessica@epa.gov>; Hanselman, Erik <Hanselman.Erik@epa.gov>; Oif, Leslie <Oif.Leslie@epa.gov>; Garvey, Mark <Garvey.Mark@epa.gov>; Chang, Patrick <Chang.Patrick@epa.gov>; Miles, Erin <Miles.Erin@epa.gov>; Fitz-James, Schatzi <Fitz-James.Schatzi@epa.gov>; Cogliano, Gerain <Cogliano.Gerain@epa.gov>; Raffaele, Kathleen <raffaele.kathleen@epa.gov>; Jacob, Sicy <Jacob.Sicy@epa.gov>; Luke, April <Luke.April@epa.gov>; Chaudhari, Narendra <Chaudhari.Narendra@epa.gov>; Birchfield, Norman <Birchfield.Norman@epa.gov>; McMinimy, Chris <McMinimy.Chris@epa.gov>; Young, Taylor <Young.Taylor@epa.gov>; Foster, Barbara <Foster.Barbara@epa.gov>; Branby, Jill <Branby.Jill@epa.gov>; Cooperstein, Sharon <Cooperstein.Sharon@epa.gov>; Jenkins, Robin <Jenkins.Robin@epa.gov>; Watkins, Stephen <watkins.stephen@epa.gov>; Burden, Susan <Burden.Susan@epa.gov>; Impellitteri, Christopher <Impellitteri.Christopher@epa.gov>; Pickrel, Jan <Pickrel.Jan@epa.gov>; Flaherty, Colleen <Flaherty.Colleen@epa.gov>; Rexhepi, Doruntine <Rexhepi.Doruntine@epa.gov>; Davis, Amber <Davis.Amber@epa.gov>; Frederick, Tim <Frederick.Tim@epa.gov>
Cc: Stalcup, Dana <Stalcup.Dana@epa.gov>
Subject: Response May be Required....Follow-up to our Workgroup Meeting/Option Selection

Good morning,

I hope that this finds you all doing well.

As I mentioned in yesterday's workgroup meeting, we are preparing for the various option selection meetings. As a matter of fact, I just saw that the meeting with the Administrator and AA's has been set up for September 8th, so we will schedule the pre-option selection meeting with you and your AAs shortly.

At this time, we will be raising two issues during option selection:

: **Ex. 5 Deliberative Process (DP)**

So my ask is whether there are any other options that you believe should be raised for consideration during option selection, and if so to please send them to me by Monday at noon. I will send the option selection materials to you next week.

As always, I appreciate your help.

Thank you.

Michelle

Michelle Schutz
U.S. EPA Office of Land and Emergency Management
Office of Superfund Remediation and Technology Innovation
Schutz.michelle@epa.gov

Message

From: Behl, Betsy [Behl.Betsy@epa.gov]
Sent: 8/20/2021 12:18:34 PM
To: Jacobs, Brittany [jacobs.brittany@epa.gov]
CC: Euling, Susan [Euling.Susan@epa.gov]
Subject: Fwd: Netherland PFAS study

FYI

Sent from my iPhone

Begin forwarded message:

> **From:** "Henry, Tala" <Henry.Tala@epa.gov>
> **Date:** August 19, 2021 at 5:34:40 PM EDT
> **To:** "Behl, Betsy" <Behl.Betsy@epa.gov>
> **Subject: FW: Netherland PFAS study**
>
> FYI,
> The Chemours worker 'study' (study description and letter with results) have now been made public in OPPT's ChemView also.
>
> Tala R. Henry, Ph.D.
> Deputy Director
> Office of Pollution Prevention & Toxics
>
> T: 202-564-2959
> E: henry.tala@epa.gov
>
> ---
>
> **From:** Santacroce, Jeffrey <Santacroce.Jeffrey@epa.gov>
> **Sent:** Thursday, August 19, 2021 4:33 PM
> **To:** Henry, Tala <Henry.Tala@epa.gov>
> **Cc:** Phillips, Martin B. <phillips.martinb@epa.gov>; Myrick, Pamela <Myrick.Pamela@epa.gov>; Barone, Stan <Barone.Stan@epa.gov>; Fay, Kellie <Fay.Kellie@epa.gov>
> **Subject:** RE: Netherland PFAS study
>
> Hi Tala,
>
> As an FYI, these two documents were published in ChemView earlier this week.
>
> Here's the url to the records in ChemView:
>
> https://chemview.epa.gov/chemview/?tf=2&caseNos=8EHQ-21-22511A_8EHQ-21-22511B&su=2-5-6-7-37574985&as=3-10-13-9-8&ac=14-16&ma=4-11-17-1981377&gs=&tds=0&tdl=10&tas1=1&tas2=asc&tas3=undefined&tss=&modal=detail&modalId=7223433&modalSrc=5
>
> **Jeff Santacroce**
> Project Management and Operations Division

Office of Pollution Prevention and Toxics
Office of Chemical Safety and Pollution Prevention
U.S. Environmental Protection Agency
Office: 202-564-2818
https://chemview.epa.gov/chemview
https://www.epa.gov/assessing-and-managing-chemicals-under-tsca/introduction-chemview

From: Henry, Tala <Henry.Tala@epa.gov>
Sent: Monday, July 26, 2021 9:49 AM
To: Fay, Kellie <Fay.Kellie@epa.gov>; Barone, Stan <Barone.Stan@epa.gov>
Cc: Phillips, Martin B. <phillips.martinb@epa.gov>; Ginn, Beau <ginn.beau@epa.gov>; Santacroce, Jeffrey <Santacroce.Jeffrey@epa.gov>; Myrick, Pamela <Myrick.Pamela@epa.gov>
Subject: RE: Netherland PFAS study
Importance: High

Thanks much Kelly – maybe for the PMOD Team – how much LOE/time needed to get this moved to ChemView? (BOTH pieces, the study description and the 'results', i.e., the FYI letter)?

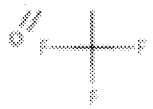
Tala R. Henry, Ph.D.
Deputy Director
Office of Pollution Prevention & Toxics

T: 202-564-2959
E: henry.tala@epa.gov

From: Fay, Kellie <Fay.Kellie@epa.gov>
Sent: Monday, July 26, 2021 9:15 AM
To: Henry, Tala <Henry.Tala@epa.gov>; Barone, Stan <Barone.Stan@epa.gov>
Cc: Phillips, Martin B. <phillips.martinb@epa.gov>; Ginn, Beau <ginn.beau@epa.gov>; Santacroce, Jeffrey <Santacroce.Jeffrey@epa.gov>
Subject: Netherland PFAS study

Hi Tala,
The FYI that appeared to have a CBI claim has since been clarified that it is NOT CBI (see attached email). The PDF "Chemours-HFPO-DA" was requested to be placed into CIS on 6/17/21 along with a covernote.
Added to CIS since June 15th, 2021
Commun S (CBI Review) – the email exchange confirming the study is NOT CBI
Commun S the attached "half-time HFPO_DA" – not CBI
I do not see these studies in ChemView, however (screenshot, below, for what is in chemview for this chemical)

I hope this helps.
Kellie



Chemical Name: TSCA § 12(b) Export Notification	CAS #:
α 2,3,3,3-Tetrafluoro-2-(heptafluoropropoxy)propionic acid	**13252-13-6**

EPA Actions

TSCA § 5 Orders
CO

Chemicals Subject to TSCA § 12(b) Export Notification
TSCA § 12(b) Information

Manufacturing, Processing, Use, and Release Data Maintained by EPA

Chemical Data Reporting
CDR Summary

Message

From: Behl, Betsy [Behl.Betsy@epa.gov]
Sent: 8/20/2021 3:02:21 PM
To: Euling, Susan [Euling.Susan@epa.gov]; Flaherty, Colleen [Flaherty.Colleen@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]
Subject: RE: Response May be Required....Follow-up to our Workgroup Meeting/Option Selection

Ex. 5 Deliberative Process (DP)

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Thursday, August 12, 2021 9:55 AM
To: Flaherty, Colleen <Flaherty.Colleen@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>; Behl, Betsy <Behl.Betsy@epa.gov>
Subject: RE: Response May be Required....Follow-up to our Workgroup Meeting/Option Selection

Betsy and Colleen,

Ex. 5 Deliberative Process (DP)

Sue

From: Flaherty, Colleen <Flaherty.Colleen@epa.gov>
Sent: Thursday, August 12, 2021 9:23 AM
To: Euling, Susan <Euling.Susan@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>; Behl, Betsy <Behl.Betsy@epa.gov>
Subject: FW: Response May be Required....Follow-up to our Workgroup Meeting/Option Selection

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From: Schutz, Michelle <Schutz.Michelle@epa.gov>
Sent: Thursday, August 12, 2021 9:21 AM
To: Brinkerhoff, Chris <Brinkerhoff.Chris@epa.gov>; Shah, Manthan <shah.manthan@epa.gov>; Wolf, Joel <Wolf.Joel@epa.gov>; Welbourn, Brandon <Welbourn.Brandon@epa.gov>; Freed, Elisabeth <Freed.Elisabeth@epa.gov>; Azad, Ava <Azad.Ava@epa.gov>; Schlafstein, Jessica <Schlafstein.Jessica@epa.gov>; Hanselman, Erik <Hanselman.Erik@epa.gov>; Oif, Leslie <Oif.Leslie@epa.gov>; Garvey, Mark <Garvey.Mark@epa.gov>; Chang, Patrick <Chang.Patrick@epa.gov>; Miles, Erin <Miles.Erin@epa.gov>; Fitz-James, Schatzi <Fitz-James.Schatzi@epa.gov>; Cogliano, Gerain <Cogliano.Gerain@epa.gov>; Raffaele, Kathleen <raffaele.kathleen@epa.gov>; Jacob, Sicy <Jacob.Sicy@epa.gov>; Luke, April <Luke.April@epa.gov>; Chaudhari, Narendra <Chaudhari.Narendra@epa.gov>; Birchfield, Norman <Birchfield.Norman@epa.gov>; McMinimy, Chris <McMinimy.Chris@epa.gov>; Young, Taylor <Young.Taylor@epa.gov>; Foster, Barbara <Foster.Barbara@epa.gov>; Branby, Jill <Branby.Jill@epa.gov>; Cooperstein, Sharon <Cooperstein.Sharon@epa.gov>; Jenkins, Robin <Jenkins.Robin@epa.gov>; Watkins, Stephen <watkins.stephen@epa.gov>; Burden, Susan <Burden.Susan@epa.gov>; Impellitteri, Christopher <Impellitteri.Christopher@epa.gov>; Pickrel, Jan <Pickrel.Jan@epa.gov>; Flaherty, Colleen <Flaherty.Colleen@epa.gov>; Rexhepi, Doruntine <Rexhepi.Doruntine@epa.gov>; Davis, Amber <Davis.Amber@epa.gov>; Frederick, Tim <Frederick.Tim@epa.gov>
Cc: Stalcup, Dana <Stalcup.Dana@epa.gov>
Subject: Response May be Required....Follow-up to our Workgroup Meeting/Option Selection

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As always, I appreciate your help.

Thank you.

Michelle

Michelle Schutz
U.S. EPA Office of Land and Emergency Management
Office of Superfund Remediation and Technology Innovation
Schutz.michelle@epa.gov

Message

From: Behl, Betsy [Behl.Betsy@epa.gov]
Sent: 8/23/2021 12:53:00 PM
To: Jacobs, Brittany [jacobs.brittany@epa.gov]; Euling, Susan [Euling.Susan@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: RE: PFBA

Thanks, I didn't know all this was going on but happy it was. Thanks for letting me know.

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Sunday, August 22, 2021 8:45 PM
To: Behl, Betsy <Behl.Betsy@epa.gov>; Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: PFBA

Hi Everyone,

Ex. 5 Deliberative Process (DP)

Britt

From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Wednesday, August 18, 2021 6:36 PM
To: Euling, Susan <Euling.Susan@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: PFBA

I think that is an excellent idea. Will ask Samantha.

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Wednesday, August 18, 2021 6:08 PM
To: Behl, Betsy <Behl.Betsy@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: PFBA

Ex. 5 Deliberative Process (DP)

Sue

From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Wednesday, August 18, 2021 6:05 PM
To: Euling, Susan <Euling.Susan@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: FW: PFBA

Ex. 5 Deliberative Process (DP)

before I call Steve V.

b

From: Steve Via <SVia@awwa.org>
Sent: Wednesday, August 18, 2021 5:57 PM
To: Behl, Betsy <Behl.Betsy@epa.gov>
Subject: PFBA

Interesting approach to presenting the Oral RFD - https://cfpub.epa.gov/ncea/iris_drafts/recordisplay.cfm?deid=350051.

Is it worth taking a moment to discuss any lessons learned from this this risk assessment's development?

Thanks,
Steve

Steve Via
Director, Federal Relations
American Water Works Association
Direct +1 202.326.6130
svia@awwa.org | www.awwa.org

American Water Works Association

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American Water Works Association
Dedicated to the World's Most Important Resource ®

Message

From: Flaherty, Colleen [Flaherty.Colleen@epa.gov]
Sent: 8/24/2021 2:44:06 PM
To: Euling, Susan [Euling.Susan@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]
CC: Lalley, Cara [Lalley.Cara@epa.gov]
Subject: RE: GenX comms
Attachments: Tox Assessment Press Release and Public Fact Sheet_11.13.18_EMBARGOED .pdf; GenX Chemicals and PFBS Toxicity Assessment 10.2.18.doc; Engagement Process Draft Tox Assessments_9.25.18_DRAFT_FOR_REVIEW.docx

Here's the template:
Comm Plan Template_OST-modified OPA template.docx

And I've attached what I think are the final comms from the draft GenX assessment. I don't seem to have the final rollout doc for the draft GenX assessment. Copying Cara who might be able to provide it.

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Tuesday, August 24, 2021 10:36 AM
To: Flaherty, Colleen <Flaherty.Colleen@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: RE: GenX comms

Hi Colleen,

I appreciate the reminder and information about the timing requirements.

Are these the documents needed?:

- FRN
- Press Release
- Comms Plan
- Q&A
- Other?

We do have a schedule for the steps up to release including outreach that Betsy, Greg, and Brittany have all OKed. Would you like to see it?

Brittany, my understanding was that you had freed up some brain space, now that the 3 GenX docs are off your plate, to start revising the prior comms materials. Would you like me to set up a meeting for us to discuss? I could wait until Greg is back and set up the meeting for the 3 of us. Let me know how I can be helpful.

Thanks,
Sue

From: Flaherty, Colleen <Flaherty.Colleen@epa.gov>
Sent: Tuesday, August 24, 2021 10:25 AM
To: Euling, Susan <Euling.Susan@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: GenX comms

Hi Sue and Britt - Just a reminder that we need to send comms to OW IO a month in advance of anticipated release (e.g., if we are targeting Oct. 1 for GenX release we need to send to OW Sept 1). Send me a draft whenever you have it and I will review, then Betsy will probably want to review, then we need to have Cara review, then she sends it to OW IO. Probably will need to loop in OGWDW on this as well. Just wanted to make sure you knew about the 1 month lead time. Thanks.

Message

From: Lalley, Cara [Lalley.Cara@epa.gov]
Sent: 8/24/2021 3:58:30 PM
To: Flaherty, Colleen [Flaherty.Colleen@epa.gov]; Euling, Susan [Euling.Susan@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]
Subject: RE: GenX comms

Right- we usually include just a few tough, but expected Q&A in the rollout document.

From: Flaherty, Colleen <Flaherty.Colleen@epa.gov>
Sent: Tuesday, August 24, 2021 11:51 AM
To: Euling, Susan <Euling.Susan@epa.gov>; Lalley, Cara <Lalley.Cara@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: RE: GenX comms

q/a is internal for when we get press questions. They aren't published.

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Tuesday, August 24, 2021 11:49 AM
To: Flaherty, Colleen <Flaherty.Colleen@epa.gov>; Lalley, Cara <Lalley.Cara@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: RE: GenX comms

I'll cancel the call that I just set up and we can proceed with your process (below).

Where does Q and A fit in? In the Gen Pop Fact Sheet?

Thanks,

Sue

From: Flaherty, Colleen <Flaherty.Colleen@epa.gov>
Sent: Tuesday, August 24, 2021 11:47 AM
To: Lalley, Cara <Lalley.Cara@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>; Euling, Susan <Euling.Susan@epa.gov>
Subject: RE: GenX comms

Sounds good. **Ex. 5 Deliberative Process (DP)**

From: Lalley, Cara <Lalley.Cara@epa.gov>
Sent: Tuesday, August 24, 2021 11:37 AM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>; Flaherty, Colleen <Flaherty.Colleen@epa.gov>; Euling, Susan <Euling.Susan@epa.gov>
Subject: RE: GenX comms

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

Thanks

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Tuesday, August 24, 2021 11:14 AM
To: Flaherty, Colleen <Flaherty.Colleen@epa.gov>; Euling, Susan <Euling.Susan@epa.gov>
Cc: Lalley, Cara <Lalley.Cara@epa.gov>
Subject: RE: GenX comms

Hi,

Yes, I think I can work on the FRN and comms now that the combined tox doc seems like it won't require as much work from me. I asked the PFBS team for their final comms docs so I could use that to build off of as well. What isn't clear to me is what documents are needed and I guess who is responsible for what (e.g. Qs and As; press release, fact sheet). If we could confirm what is needed, that will be really helpful for my planning purposes. Maybe a short meeting will be best to discuss this.

In the meantime, I will take a first crack at the documents listed below and have drafts by the end of the week so we can try to make this Sept 1 deadline.

1. FRN. I will update the FRN we used for the draft assessment.
2. Comm Plan Template (Colleen linked below)
3. General Public Fact Sheet (update fact sheet we developed for the draft)
4. Technical Fact Sheet (update fact sheet we developed for the draft)

The other thing that still isn't clear is our outreach to stakeholders for the final assessment which is discussed in some of these docs. More of an FYI. Will flag.

Britt

From: Flaherty, Colleen <Flaherty.Colleen@epa.gov>
Sent: Tuesday, August 24, 2021 10:44 AM
To: Euling, Susan <Euling.Susan@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Cc: Lalley, Cara <Lalley.Cara@epa.gov>
Subject: RE: GenX comms

Here's the template:
Comm Plan Template_OST-modified OPA template.docx

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From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Tuesday, August 24, 2021 10:36 AM

To: Flaherty, Colleen <Flaherty.Colleen@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
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Message

From: Lalley, Cara [Lalley.Cara@epa.gov]
Sent: 8/24/2021 4:03:07 PM
To: Euling, Susan [Euling.Susan@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Flaherty, Colleen [Flaherty.Colleen@epa.gov]
Subject: RE: GenX comms

R
v

Ex. 5 Deliberative Process (DP)

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Tuesday, August 24, 2021 11:59 AM
To: Lalley, Cara <Lalley.Cara@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>; Flaherty, Colleen <Flaherty.Colleen@epa.gov>
Subject: RE: GenX comms

Ex. 5 Deliberative Process (DP)

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Subject: GenX comms

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Ex. 5 Deliberative Process (DP)

From: Lalley, Cara <Lalley.Cara@epa.gov>
Sent: Tuesday, August 24, 2021 12:02 PM
To: Flaherty, Colleen <Flaherty.Colleen@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>; Euling, Susan <Euling.Susan@epa.gov>
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Sent: 8/24/2021 4:15:42 PM
To: Jacobs, Brittany [jacobs.brittany@epa.gov]; Flaherty, Colleen [Flaherty.Colleen@epa.gov]; Euling, Susan [Euling.Susan@epa.gov]
Subject: RE: GenX comms
Attachments: SteamELG 2021 Rulemaking Initiation_Comms Plan+press release_final.docx

Below are the "nuts and bolts" I initially provided to David for our kickoff discussion on a Steam Electric ELG announcement, and attached is the press release + rollout document that it eventually turned into. You can see that quite a bit of messaging evolved during the 2 weeks in between.

Ex. 5 Deliberative Process (DP)

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Oh- another FYI about the Steam announcement last month. We didn't include Qs and As in the rollout because they were prepared separately for an embargoed interview with the Washington Post a couple of hours before press release issuance. I actually don't have those, but David would (they were prepared at very high levels of the agency).

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When are we targeting release? Beginning of October?

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Sent: 8/24/2021 4:26:41 PM
To: Euling, Susan [Euling.Susan@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]
CC: Lalley, Cara [Lalley.Cara@epa.gov]
Subject: RE: GenX comms

OK, good then we have some time (9/15)

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Tuesday, August 24, 2021 12:26 PM
To: Flaherty, Colleen <Flaherty.Colleen@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
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Oct. 15.

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1)

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Attachments: GenX PFBS tox assessments_full rollout_v.6.docx

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To: Euling, Susan <Euling.Susan@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: GenX comms

Hi Sue and Britt - Just a reminder that we need to send comms to OW IO a month in advance of anticipated release (e.g., if we are targeting Oct. 1 for GenX release we need to send to OW Sept 1). Send me a draft whenever you have it and I will review, then Betsy will probably want to review, then we need to have Cara review, then she sends it to OW IO. Probably will need to loop in OGWDW on this as well. Just wanted to make sure you knew about the 1 month lead time. Thanks.

Message

From: Flaherty, Colleen [Flaherty.Colleen@epa.gov]
Sent: 8/26/2021 6:41:48 PM
To: Jacobs, Brittany [jacobs.brittany@epa.gov]; Euling, Susan [Euling.Susan@epa.gov]
Subject: Flaherty, Colleen shared "GenX final tox assessment_public fact sheet 8.26.21" with you.

Flaherty, Colleen shared a file with you

Hi guys, here's a draft of the public fact sheet for the final GenX assessment. This is the one Betsy wants to give to Radhika prior to the biweekly on 9/8.

GenX final tox assessment_public fact sheet 8.26.21

This link only works for the direct recipients of this message.

Open

Microsoft

Privacy Statement

Message

From: Lalley, Cara [Lalley.Cara@epa.gov]
Sent: 8/26/2021 8:01:22 PM
To: Flaherty, Colleen [Flaherty.Colleen@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]
CC: Kearney, Renee [Kearney.Renee@epa.gov]; Euling, Susan [Euling.Susan@epa.gov]
Subject: RE: collecting the URLs where GenX content is/will be posted

I can ask Angela to swap it for: https://www.regulations.gov/document/EPA-HQ-OW-2018-0614-0001

We don't have editing rights to that agency webpage, so we'll have to remember to tell Angela to swap again when the FRN for the final tox assessment officially publishes in Oct/Nov.

From: Flaherty, Colleen <Flaherty.Colleen@epa.gov>
Sent: Thursday, August 26, 2021 3:39 PM
To: Lalley, Cara <Lalley.Cara@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Cc: Kearney, Renee <Kearney.Renee@epa.gov>; Euling, Susan <Euling.Susan@epa.gov>
Subject: RE: collecting the URLs where GenX content is/will be posted

We also never swapped out the prepub FRN for the actual FRN:
https://www.epa.gov/sites/default/files/2018-11/documents/genx_and_pfbs_frn.prepub_.pdf

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From: Lalley, Cara <Lalley.Cara@epa.gov>
Sent: Thursday, August 26, 2021 3:17 PM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>
Cc: Kearney, Renee <Kearney.Renee@epa.gov>; Flaherty, Colleen <Flaherty.Colleen@epa.gov>; Euling, Susan <Euling.Susan@epa.gov>
Subject: collecting the URLs where GenX content is/will be posted

Hi Brittany- Colleen is working with OPA to get this agency webpage corrected/updated ASAP:
https://www.epa.gov/pfas/genx-toxicity-assessments-documents

This made me realize that it's probably a good idea to start collecting all the EPA webpages we know of where GenX content ***may*** need to be updated or added. Such a list could be added to the end of the rollout document for the Final GenX Tox Assessment as an internal reference for all of us on this email.

Renee- is there an easy way to get started on this list by searching Drupal 9 (both webpages and PDFs)? If not, we can do our best in OST and then I can share it with OGWDW, ORD and OPA to capture the rest.

Thanks

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Cara Lalley
Communications & Congressional Coordinator
Office of Science & Technology
U.S. EPA Office of Water
Desk: 202-566-0372
Work cell: 202-288-9435

Message

From: Flaherty, Colleen [Flaherty.Colleen@epa.gov]
Sent: 8/26/2021 8:14:51 PM
To: Jacobs, Brittany [jacobs.brittany@epa.gov]; Euling, Susan [Euling.Susan@epa.gov]
Subject: Flaherty, Colleen shared "GenX final tox assessment_tech fact sheet_ 8.26.21" with you.

Flaherty, Colleen shared a file with you

Here's the draft of the technical fact sheet. On to the FRN!

GenX final tox assessment_tech fact sheet_ 8.26.21

This link only works for the direct recipients of this message.

Open

Microsoft

Privacy Statement

Message

From: Flaherty, Colleen [Flaherty.Colleen@epa.gov]
Sent: 8/31/2021 8:05:56 PM
To: Jacobs, Brittany [jacobs.brittany@epa.gov]; Euling, Susan [Euling.Susan@epa.gov]
Subject: public fact sheet for GenX

Importance: High

Guys, the public fact sheet for Radhika is now due this Thursday, not Friday. I sent you the link last week. Betsy will want to review so we need to finish tomorrow, I'd say. Let me know if I can do anything else to help.

Thanks,
Colleen

Message

From: Behl, Betsy [Behl.Betsy@epa.gov]
Sent: 8/31/2021 5:00:12 PM
To: Euling, Susan [Euling.Susan@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]
CC: Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: RE: review of GenX RTC for public comments

Excellent. many thanks

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Tuesday, August 31, 2021 12:59 PM
To: Behl, Betsy <Behl.Betsy@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Cc: Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: review of GenX RTC for public comments

Thank you Betsy for your excellent comments - I just went through them. A very good point about how sometimes the repeat of information works well to emphasize a point and other times is redundant. And a good point about the human ½ life study and perhaps best to keep that info at a high level.

I have set up a meeting with Brittany and Greg to resolve the comments and get the clean version to Deborah by the end of this week. Will that timing work?

Sue

From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Tuesday, August 31, 2021 10:51 AM
To: Euling, Susan <Euling.Susan@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: RE: review of GenX RTC for public comments

Thanks for the opportunity to review this document. I think you did a nice job incorporating the new information on to and systematic review. Sue's comments were helpful. The last section with references to the PFAS action plan shouldn't be hard to edit after we get some comms on the new roadmap. It is very unspecific regarding actions, but we just need to ref to it somehow. I think the existing response is largely fine (see edits and questions). It will be helpful to see comms on the upcoming roadmap to know how to phrase some of this. We don't need to commit to what we will do in the future (re outreach, tool development) in this response to comments, so be general there. I would recommend another tech edit after you go through these comments to polish it up.

Very nice job.

Betsy

Elizabeth (Betsy) Behl, Director Health and Ecological Criteria Division,
Office of Science and Technology, Office of Water, EPA
Office: 202-566-0788
Cell: Ex. 6 Personal Privacy (PP)

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Wednesday, August 25, 2021 9:30 AM

To: Jacobs, Brittany <jacobs.brittany@epa.gov>
Cc: Behl, Betsy <Behl.Betsy@epa.gov>
Subject: review of GenX RTC for public comments

Hi Brittany,

Attached are my suggested edits and comments on the RTC for public comments. Overall, the RTC looks very good!

There are a lot of edits because I think it is important to be careful with responses to public comments.

Most of my comments fall into these categories –

1)
2)
3)
4)
5)

Ex. 5 Deliberative Process (DP)

Sue

Message

From: Lalley, Cara [Lalley.Cara@epa.gov]
Sent: 8/31/2021 5:01:00 PM
To: Kearney, Renee [Kearney.Renee@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]
CC: Flaherty, Colleen [Flaherty.Colleen@epa.gov]; Euling, Susan [Euling.Susan@epa.gov]
Subject: RE: collecting the URLs where GenX content is/will be posted

Thanks, Renee. Bummer. Because we are not putting out/have not put out a health advisory or standard, there's nowhere on a water website that made sense to post the draft GenX tox assessment. So, it was put on the agency PFAS website. But there are likely various agency documents online that mention GenX and ***may*** need updating, which is why I asked. Stuff like: https://www.epa.gov/sites/default/files/2017-11/documents/2017-11-21_pfas_fact_sheet_final.508.pdf

Colleen- in addition to the GenX page you are having OPA fix for the time being, this one will also need archiving or to be referenced by the final GenX tox assessment page in October: https://www.epa.gov/pfas/learn-about-genx-chemicals-toxicity-assessment (I don't know why it says 2019 rather than 2018, unless the official FRN took that long to publish.)

Guessing that first one was the document page and second one was the basic page for GenX Toxicity Assessment when the agency was in Drupal 7. Now we don't need separate document pages in Drupal 9—can link PDFs directly to the basic page for a topic.

If you want to model the final GenX Tox Assessment (basic) page after the PFBS one, just let me know and I'll inform Angela and Andrea now: https://www.epa.gov/pfas/genx-toxicity-assessments-documents

Thanks

From: Kearney, Renee <Kearney.Renee@epa.gov>
Sent: Friday, August 27, 2021 6:42 AM
To: Lalley, Cara <Lalley.Cara@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Cc: Flaherty, Colleen <Flaherty.Colleen@epa.gov>; Euling, Susan <Euling.Susan@epa.gov>
Subject: RE: collecting the URLs where GenX content is/will be posted

D9 took that feature away.

FYI - -
Don't recall that topic on OST web pages

Renee Kearney, OST Webmaster
202-281-0176 (Work Cell)
Hours 6am-2:30pm

From: Lalley, Cara <Lalley.Cara@epa.gov>
Sent: Thursday, August 26, 2021 3:17 PM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>
Cc: Kearney, Renee <Kearney.Renee@epa.gov>; Flaherty, Colleen <Flaherty.Colleen@epa.gov>; Euling, Susan <Euling.Susan@epa.gov>
Subject: collecting the URLs where GenX content is/will be posted

Hi Brittany- Colleen is working with OPA to get this agency webpage corrected/updated ASAP:
https://www.epa.gov/pfas/genx-toxicity-assessments-documents

This made me realize that it's probably a good idea to start collecting all the EPA webpages we know of where GenX content ***may*** need to be updated or added. Such a list could be added to the end of the rollout document for the Final GenX Tox Assessment as an internal reference for all of us on this email.

Renee- is there an easy way to get started on this list by searching Drupal 9 (both webpages and PDFs)? If not, we can do our best in OST and then I can share it with OGWDW, ORD and OPA to capture the rest.

Thanks

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Cara Lalley
Communications & Congressional Coordinator
Office of Science & Technology
U.S. EPA Office of Water
Desk: 202-566-0372
Work cell: 202-288-9435

Message

From: Behl, Betsy [Behl.Betsy@epa.gov]
Sent: 8/31/2021 11:22:40 PM
To: Euling, Susan [Euling.Susan@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: genX for radhika
Attachments: GenX next steps 082921 .docx; GenX chemicals tox assessment SCHEDULE 090121bb clean.docx

This is the GenX blurb I drafted for next week's biweekly. Above is a draft one pager I drafted to elicit decisions. Attached is also a revised draft timeline. Lets find a time tomorrow to discuss this all. Maybe if the GenX/PFAS meeting runs short.

GenX assessment status and next steps

The final GenX toxicity assessment has completed OST Office Director review. This will be the fourth PFAS for which EPA has developed a final toxicity assessment. A fact sheet (attached) summarizes major conclusions and changes to the document following its release for public comment.

The draft GenX toxicity assessment was released for public comment in 2018 and the final was slated to be released in 2020. The document is now complete, and release of the final toxicity assessment is currented targeted for October-November 2021. We would like to begin engagement soon with states and tribes who have or are developing GenX standards and with CDC/ATSDR and plan outreach to a diverse group of stakeholders shortly before release to provide background on the final assessments. OST is seeking input on three topics to be able to finalize the timeline. These three topics and options are highlighted in the attached one-pager.

Attached above is a draft of the one-pager I developed with the 3 decisions. Deborah wanted to ask Radhika about the FRN, the other two are decisions about starting outreach to states early and the OMB process. I am waiting from some language from ORD about their process at this stage.

Elizabeth (Betsy) Behl, Director Health and Ecological Criteria Division,
Office of Science and Technology, Office of Water, EPA
Office: 202-566-0788
Cell: Ex. 6 Personal Privacy (PP)

Message

From: Behl, Betsy [Behl.Betsy@epa.gov]
Sent: 9/1/2021 2:53:36 PM
To: Euling, Susan [Euling.Susan@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: RE: genX for radhika

Sorry about that. I changed the name of the GenX meeting to PFAS in general and thought you were on that. I will make sure you are added for future

---

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Wednesday, September 1, 2021 9:27 AM
To: Behl, Betsy <Behl.Betsy@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: genX for radhika

Sounds good – I was not invited to the monthly PFAS check in meeting so not sure when that is. FYI.

From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Tuesday, August 31, 2021 7:23 PM
To: Euling, Susan <Euling.Susan@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: genX for radhika

This is the GenX blurb I drafted for next week's biweekly. Above is a draft one pager I drafted to elicit decisions. Attached is also a revised draft timeline. Lets find a time tomorrow to discuss this all. Maybe if the GenX/PFAS meeting runs short.

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Elizabeth (Betsy) Behl, Director Health and Ecological Criteria Division,
Office of Science and Technology, Office of Water, EPA
Office: 202-566-0788
Cell: Ex. 6 Personal Privacy (PP)

Message

From: Behl, Betsy [Behl.Betsy@epa.gov]
Sent: 9/1/2021 4:16:12 PM
To: Euling, Susan [Euling.Susan@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: RE: genX for radhika
Attachments: GenX next steps 082921 .docx

So this is my attempt at the one pager (3 pages) in light of the conversation with ORD. your feedback is appreciated. I need to get Deborah's take as well and I think today is her last day this week.

From: Behl, Betsy
Sent: Tuesday, August 31, 2021 7:23 PM
To: Euling, Susan <Euling.Susan@epa.gov>; Jacobs, Brittany <Jacobs.Brittany@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: genX for radhika

This is the GenX blurb I drafted for next week's biweekly. Above is a draft one pager I drafted to elicit decisions. Attached is also a revised draft timeline. Lets find a time tomorrow to discuss this all. Maybe if the GenX/PFAS meeting runs short.

GenX assessment status and next steps
The final GenX toxicity assessment has completed OST Office Director review. This will be the fourth PFAS for which EPA has developed a final toxicity assessment. A fact sheet (attached) summarizes major conclusions and changes to the document following its release for public comment.
The draft GenX toxicity assessment was released for public comment in 2018 and the final was slated to be released in 2020. The document is now complete, and release of the final toxicity assessment is currented targeted for October-November 2021. We would like to begin engagement soon with states and tribes who have or are developing GenX standards and with CDC/ATSDR and plan outreach to a diverse group of stakeholders shortly before release to provide background on the final assessments. OST is seeking input on three topics to be able to finalize the timeline. These three topics and options are highlighted in the attached one-pager.

Attached above is a draft of the one-pager I developed with the 3 decisions. Deborah wanted to ask Radhika about the FRN, the other two are decisions about starting outreach to states early and the OMB process. I am waiting from some language from ORD about their process at this stage.

Elizabeth (Betsy) Behl, Director Health and Ecological Criteria Division,
Office of Science and Technology, Office of Water, EPA
Office: 202-566-0788
Cell: Ex. 6 Personal Privacy (PP)

Message

From: Behl, Betsy [Behl.Betsy@epa.gov]
Sent: 9/1/2021 9:56:57 PM
To: Euling, Susan [Euling.Susan@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: GenX one-pager
Attachments: GenX next steps 090121.docx

Just sent this to Samantha and Deborah for their review and comment. I was able to search mail and get some dates for the PFBS experience. The were in review from August 2019 to late 2020 (not sure if it was September or November). OVER A YEAR in a 4 phase review process. And then they did it again in about 2 weeks in January 2021 with a fake document. Unbelievable. It take a while to recover from that sort of abuse.

Elizabeth (Betsy) Behl, Director Health and Ecological Criteria Division,
Office of Science and Technology, Office of Water, EPA
Office: 202-566-0788
Cell: Ex. 6 Personal Privacy (PP)

Message

From: Akhter, Shamima [Akhter.Shamima@epa.gov]
Sent: 9/14/2021 1:09:30 PM
To: Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]
CC: Euling, Susan [Euling.Susan@epa.gov]
Subject: FW: Reference Questions on GenX Lite Tech Edit TD

Please see the questions below from TT:

Below please find our initial questions about the references for the GenX document below.

1. DuPont-C30031_516655 (page 4 of main body/overall Word document page 19): Brittany mentioned that she would send the PDF to make sure the reference is cited correctly. Could you send that to us?
2. Sun et al., 2019 (page 64 of main body/overall Word document page 79): We didn't see this in the reference section. Should we add a reference for the article below or is it a different one? Hepatotoxicity of perfluorooctanoic acid and two emerging alternatives based on a 3D spheroid model - ScienceDirect
3. DuPont-29, 2008 (page 82 of main body/overall Word document page 97): We wanted to check whether this citation should be "DuPont-24459, 2008" instead.
4. Pinheiro et al., 2016 (page 92 of main body/overall Word document page 107): We didn't see this in the reference section. Should we add a reference for the article below, or is it a different one? https://www.researchgate.net/profile/Juliana-Bernardi/publication/302970201_Hypertensive_disorders_during_pregnancy_and_health_outcomes_in_the_offspring_A_systematic_review/links/5a2c38fda6fdccfbbf87342b/Hypertensive-disorders-during-pregnancy-and-health-outcomes-in-the-offspring-A-systematic-review.pdf
5. Chemours, 2021 (page 101 of main body/overall Word document page 116): We didn't see this in the reference section and we weren't sure what reference it should be. Please let us know.
6. Arbo Unie, 2020 (page 101 of main body/overall Word document page 116): We didn't see this in the reference section and we weren't sure what reference it should be. Please let us know

Thank you,

Sue

Susan Adair Lanberg | Senior Environmental Scientist, WTR QA Officer
Direct: (703) 385-1906, (703) 385-6000 ext.1906 | Fax: (703)385-6007
susan.lanberg@tetratech.com

Environmental Sciences
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Message

From: Miller, GregoryG [Miller.Gregory@epa.gov]
Sent: 9/14/2021 12:26:10 PM
To: Euling, Susan [Euling.Susan@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]
Subject: RE: GenX slides
Attachments: GenX Chems Slides for Agency Review_Sept 2021_blj gMiller.pptx

A few minor clarifications.

Greg Miller, Senior Environmental Health Scientist
Human Health Risk Assessment Branch
Office of Science and Technology, Health and Ecological Criteria Division
US Environmental Protection Agency, Office of Water
1200 Pennsylvania Ave, NW (MC 4304T)
Washington, DC 20460

phone: (202) 566-2310
miller.gregory@epa.gov

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Tuesday, September 14, 2021 8:17 AM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: GenX slides

Greg,

Will you be commenting as well or are you good?

Thanks,
Sue

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Tuesday, September 14, 2021 3:27 AM
To: Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: GenX slides

Hi Sue,

Thanks so much for getting these together. My comments and edits attached. I tried to track most of my changes in comment bubbles. I don't think we should include a slide comparing the RfD to other PFAS, but I think it would be helpful to have a slide that compares the RfDs from the draft to the RfDs in the final.

Let me know if you have any questions about my comments/edits.

Britt

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Monday, September 13, 2021 10:45 PM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: GenX slides
Importance: High

Hi Brittany and Greg,

Attached are draft slides. I framed these slides on the steps since the Agency reviewers have last seen the document – so from the 2nd peer review. I did retain some history about the NTP PWG because that is so significant.

The basic intro slides are included for the briefings to states and regions. Brittany, Betsy, and I discussed last Friday is making one set of slides that can be recycled for the briefings to states and regions. Alternatively, you can choose to leave this out for the Agency reviewer briefing.

I have questions for you in yellow highlight on Slides 9 and 13. I also wondered whether it would be worth adding a slide comparing the RfD to other PFAS – but opted not to include it to keep it focused on GenX. If you do want the comparison, I updated the comparison table in the Technical Fact Sheet (on SP).

We will need Betsy's review of the slides. If you could review and revise by noon or 1pm tomorrow then I could move them on to Betsy for her review.

Thanks,
Sue

Message

From: Behl, Betsy [Behl.Betsy@epa.gov]
Sent: 9/23/2021 8:24:05 PM
To: Lalley, Cara [Lalley.Cara@epa.gov]; Flaherty, Colleen [Flaherty.Colleen@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]
CC: Euling, Susan [Euling.Susan@epa.gov]
Subject: RE: GenX comms

I am happy to do that. Should I forward the 3 sharepoint documents? I think it is smart to give these to them now. I will tell them we need input in a week (COB Thursday). Does that work?

From: Lalley, Cara <Lalley.Cara@epa.gov>
Sent: Thursday, September 23, 2021 4:11 PM
To: Flaherty, Colleen <Flaherty.Colleen@epa.gov>; Behl, Betsy <Behl.Betsy@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Cc: Euling, Susan <Euling.Susan@epa.gov>
Subject: RE: GenX comms

FWIW, I think sharing with OGWDW now is best. I don't think David Risley will look at draft comms until he knows OGWDW has seen them.

From: Flaherty, Colleen <Flaherty.Colleen@epa.gov>
Sent: Thursday, September 23, 2021 4:07 PM
To: Behl, Betsy <Behl.Betsy@epa.gov>; Lalley, Cara <Lalley.Cara@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Cc: Euling, Susan <Euling.Susan@epa.gov>
Subject: GenX comms

Hi all, just checking in on GenX comms. Betsy, do you want to share these drafts with OGWDW at this point?

Message

From: Behl, Betsy [Behl.Betsy@epa.gov]
Sent: 9/24/2021 3:08:10 PM
To: Jacobs, Brittany [jacobs.brittany@epa.gov]; Euling, Susan [Euling.Susan@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: RE: Region 5 Briefing on Final Toxicity Assessment for GenX Chemicals

Good points

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Friday, September 24, 2021 11:07 AM
To: Behl, Betsy <Behl.Betsy@epa.gov>; Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: Region 5 Briefing on Final Toxicity Assessment for GenX Chemicals

Ex. 5 Deliberative Process (DP)

From: Jacobs, Brittany
Sent: Friday, September 24, 2021 11:05 AM
To: Behl, Betsy <Behl.Betsy@epa.gov>; Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: Region 5 Briefing on Final Toxicity Assessment for GenX Chemicals

I think the original invite was probably forwarded to Sophie/Mn so they wouldn't have gotten the cancellation notice. Sophie messaged me asking what was up so I let her know these briefings were meant for states developing a number.

From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Friday, September 24, 2021 10:59 AM
To: Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: RE: Region 5 Briefing on Final Toxicity Assessment for GenX Chemicals

I didn't see anyone in the waiting room, sorry about that. MN was not invited to this meeting as they were not identified as having GenX guidelines in process.

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Friday, September 24, 2021 10:56 AM
To: Behl, Betsy <Behl.Betsy@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: FW: Region 5 Briefing on Final Toxicity Assessment for GenX Chemicals

Just seeing this now – couldn't get into my laptop until now (in office).

From: Greene, Sophie (MPCA) <Sophie.Greene@state.mn.us>
Sent: Friday, September 24, 2021 9:14 AM
To: Euling, Susan <Euling.Susan@epa.gov>
Subject: RE: Region 5 Briefing on Final Toxicity Assessment for GenX Chemicals

Hello Sue,

I am trying to enter this call but am waiting in the Teams waiting room. Any suggestions?

Thanks!

Sophie

-----Original Appointment-----
From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Friday, September 17, 2021 2:10 PM
To: Euling, Susan; Greene, Sophie (MPCA); Kelly, James (MDH); Behl, Betsy; Jacobs, Brittany; Miller, GregoryG; MeghanC3.Williams@wisconsin.gov; Harris, Kimberly; Amy.Klei@epa.ohio.gov; Groetsch, Kory J. (DHHS); Jennifer Gray; Matt Prater; Carol.Hawbaker@illinois.gov
Cc: teschlyn.woods@illinois.gov; SarahP.Yang@dhs.wisconsin.gov; Goeden, Helen (MDH); Braverman, Carole
Subject: Region 5 Briefing on Final Toxicity Assessment for GenX Chemicals
When: Friday, September 24, 2021 8:00 AM-9:00 AM (UTC-06:00) Central Time (US & Canada).
Where: Microsoft Teams Meeting

-----Original Appointment-----
From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Friday, September 17, 2021 12:34 PM
To: Euling, Susan; Behl, Betsy; Jacobs, Brittany; Miller, GregoryG; MeghanC3.Williams@wisconsin.gov; Harris, Kimberly; Amy.Klei@epa.ohio.gov; Groetsch, Kory J. (DHHS); Jennifer Gray; Matt Prater; Carol.Hawbaker@illinois.gov
Cc: teschlyn.woods@illinois.gov; SarahP.Yang@dhs.wisconsin.gov; Goeden, Helen (MDH); Braverman, Carole
Subject: FW: Region 5 Briefing on Final Toxicity Assessment for GenX Chemicals
When: Friday, September 24, 2021 8:00 AM-9:00 AM (UTC-06:00) Central Time (US & Canada).
Where: Microsoft Teams Meeting

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-----Original Appointment-----
From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Thursday, September 16, 2021 3:57 PM
To: Euling, Susan; Behl, Betsy; Jacobs, Brittany; Miller, GregoryG; MeghanC3.Williams@wisconsin.gov; Harris, Kimberly;

Amy.Klei@epa.ohio.gov; Groetsch, Kory J. (DHHS); Jennifer Gray; Matt Prater; Carol.Hawbaker@illinois.gov
Cc: teschlyn.woods@illinois.gov
Subject: Region 5 Briefing on Final Toxicity Assessment for GenX Chemicals
When: Friday, September 24, 2021 9:00 AM-10:00 AM (UTC-05:00) Eastern Time (US & Canada).
Where: Microsoft Teams Meeting

Dear Region 5,

Please join us for a briefing on the final toxicity assessment for GenX Chemicals, highlighting changes in response to public and peer review comments.

Please forward this invitation to the appropriate contacts your region's states and tribes. This date and time works for EPA folks based on Outlook but if the meeting needs to be rescheduled to accommodate other folks, then please let me know.

Materials will be added prior to the meeting.

Sue

Microsoft Teams meeting

Join on your computer or mobile app

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Or call in (audio only)

Ex. 6 Personal Privacy (PP) ashington DC

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Message

From: Behl, Betsy [Behl.Betsy@epa.gov]
Sent: 9/23/2021 3:25:25 PM
To: Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]; Flaherty, Colleen [Flaherty.Colleen@epa.gov]; Euling, Susan [Euling.Susan@epa.gov]
Subject: Behl, Betsy shared "091421 Final GenX Assessment Outreach table 091621" with you.

Behl, Betsy shared a file with you

I updated this to capture two additiona lmeetings:
1. a request fro region 2 to reach out to superfund folks as they are working on these chemicals. after release.
a request from OECA to discuss this with enforcement folks, as some are negotiating now wiht industry in their cases, I am sharing this with you so you can capture other requests

091421 Final GenX Assessment Outreach table 091621

This link only works for the direct recipients of this message.

Open

Microsoft

Privacy Statement

Message

From: Flaherty, Colleen [Flaherty.Colleen@epa.gov]
Sent: 9/23/2021 8:06:39 PM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Lalley, Cara [Lalley.Cara@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]
CC: Euling, Susan [Euling.Susan@epa.gov]
Subject: GenX comms

<!--[if lte mso 15 || CheckWebRef]-->

Flaherty, Colleen has shared OneDrive for Business files with you. To view them, click the links below.

GenX Comms Plan Roll Out 8.26.21.docx

GenX final tox assessment_public fact sheet 9.20.21.docx

GenX final tox assessment_tech fact sheet_ 8.26.21.docx

<!--[endif]-->

Hi all, just checking in on GenX comms. Betsy, do you want to share these drafts with OGWDW at this point?

Message

From: Akhter, Shamima [Akhter.Shamima@epa.gov]
Sent: 10/5/2021 12:28:54 PM
To: Jacobs, Brittany [jacobs.brittany@epa.gov]
CC: Euling, Susan [Euling.Susan@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: RE: GenX Lite Tech Edit Files

No problem Brittany!

I'll let you know if TT has any questions.

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Tuesday, October 5, 2021 7:10 AM
To: Akhter, Shamima <Akhter.Shamima@epa.gov>
Cc: Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: GenX Lite Tech Edit Files
Importance: High

Hi Shamima,

I have another GenX document ready for tech edit. This is the response to the additional targeted peer review document. I have loaded it onto the Teams site (see here) that we created for the previous lite tech edit on the assessment document below. It should also be accessible to Sue through the linked document above since she has access to the Teams page. I have also re-attached the technical direction. I am asking that the tech edit on the response to peer review be completed by the end of the week (COB October 8th). Once we review and approve the tech edited document, we will ask Tetra Tech to make it 508 compliant.

Thanks so much Shamima and let me know if there are any questions or concerns.

All the best,
Brittany

From: Akhter, Shamima <Akhter.Shamima@epa.gov>
Sent: Wednesday, September 15, 2021 12:00 PM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Cc: Euling, Susan <Euling.Susan@epa.gov>
Subject: FW: GenX Lite Tech Edit Files

Please see the email below from TT that they have uploaded files to the Teams site that Sue has created. Thanks.

From: Lanberg, Susan <Susan.Lanberg@tetratech.com>
Sent: Wednesday, September 15, 2021 11:57 AM
To: Akhter, Shamima <Akhter.Shamima@epa.gov>
Cc: Carlson, Krista <krista.carlson@tetratech.com>; rachel.buzzeo@tetratech.com; Cano, Amanda <AMANDA.CANO@tetratech.com>; John Hochheimer <john.hochheimer@tetratech.com>
Subject: GenX Lite Tech Edit Files

Hi Shamima,

I wanted to let you know that I just uploaded the clean and tracked changes versions of the GenX Chemicals Toxicity Assessment files to the Teams site that EPA set up. We just left two comments in the references section of the clean version as placeholders per EPA's request.

- 091321 DRAFT near final GenX Chemicals Toxicity Assessment_9.12_For TT Tech Edit_Clean.docx
- 091321 DRAFT near final GenX Chemicals Toxicity Assessment_9.12_For TT Tech Edit_TRCH.docx

Please let us know if you have any questions.

Thank you,

Sue

Susan Adair Lanberg | Senior Environmental Scientist, WTR QA Officer
Direct: (703) 385-1906, (703) 385-6000 ext.1906 | Fax: (703)385-6007
susan.lanberg@tetratech.com

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Message

From: Behl, Betsy [Behl.Betsy@epa.gov]
Sent: 10/5/2021 3:23:08 PM
To: Euling, Susan [Euling.Susan@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]
CC: Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: RE: closing the loop: GenX Response to public comments

Looks good

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Tuesday, October 5, 2021 10:27 AM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>; Behl, Betsy <Behl.Betsy@epa.gov>
Cc: Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: closing the loop: GenX Response to public comments
Importance: High

Since Betsy may be busy, let's figure this out – I say not include anything about outreach since that was Betsy's second thought.

My suggestion is to remove the yellow highlighted sentence because 1) it is filled with promises that we have no control over; and 2) the question did not ask about PFAS.

Here is the comment and response:

2.4.c Comment: ASDWA requested that EPA provide additional information on water system recommendations for sampling and confirmation of results, as well as timeliness or response.

EPA Response:

Ex. 5 Deliberative Process (DP)

Brittany and Greg – OK with those decisions?

Sue

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Tuesday, October 5, 2021 10:04 AM
To: Euling, Susan <Euling.Susan@epa.gov>; Behl, Betsy <Behl.Betsy@epa.gov>
Cc: Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: closing the loop: GenX Response to public comments

Hi Sue,

Thanks for pinging us on these outstanding items and incorporating Tala's responses in this updated version. Here is the doc number for the GenX assessment: 822R21010. I think the other two items are for Betsy. Thanks again for your help with this document.

Britt

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Tuesday, October 5, 2021 9:52 AM
To: Behl, Betsy <Behl.Betsy@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Cc: Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: FW: closing the loop: GenX Response to public comments
Importance: High

Hi Brittany and Betsy,

I am waiting to hear back from you on 3 items below – see yellow highlight.

Happy to make the changes if you let me know the info.

Thanks,
Sue

From: Euling, Susan
Sent: Thursday, September 30, 2021 11:43 PM
To: Behl, Betsy <Behl.Betsy@epa.gov>; Jacobs, Brittany <Jacobs.Brittany@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: closing the loop: GenX Response to public comments
Importance: High

Hello Betsy, Brittany, and Greg,

The changes that were discussed (email chain below) have been made (clean and tracked changes 093021 vers attached).

Outstanding changes to make:

1)
2)
3)
4)

Ex. 5 Deliberative Process (DP)

(For Tech Edit, please let TT know whether you want to remove or keep header (with date) and footer (draft…) – What is OST format?)

Happy Oct. 1st and with no shutdown. Thank God!

Sue

From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Wednesday, September 29, 2021 1:56 PM
To: Euling, Susan <Euling.Susan@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Cc: Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: closing the loop: GenX Response to public comments

See below

Elizabeth (Betsy) Behl, Director Health and Ecological Criteria Division,
Office of Science and Technology, Office of Water, EPA
Office: 202-566-0788
Cell: Ex. 6 Personal Privacy (PP)

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Wednesday, September 29, 2021 12:49 PM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>; Behl, Betsy <Behl.Betsy@epa.gov>
Cc: Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: closing the loop: GenX Response to public comments

I can make the changes.

Thank you Brittany for your comments, reminders below (that I already had the review back from Ryan!), and the doc number. Great.

Ex. 5 Deliberative Process (DP)

Thanks!
Sue

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Wednesday, September 29, 2021 12:40 PM
To: Euling, Susan <Euling.Susan@epa.gov>; Behl, Betsy <Behl.Betsy@epa.gov>
Cc: Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: closing the loop: GenX Response to public comments
Importance: High

Hi Sue,

Perfect timing, I was just about to turn my attention to this document. See below for my comments in green. If you have time to make these edits that will definitely be a huge help. Then I can move this document and the response to the 2nd peer review to a tech edit.

Thanks!
Britt

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Wednesday, September 29, 2021 12:18 PM
To: Behl, Betsy <Behl.Betsy@epa.gov>
Cc: Miller, GregoryG <Miller.Gregory@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: closing the loop: GenX Response to public comments
Importance: High

Hi Betsy,

I'm circling back about the response to public comments doc. Now that my computer problems have been fixed, I can make the updates but first am checking where you are with things. Attached is the post-tech edit version that Deborah reviewed.

Here is the list of things to address (not addressed in attached 090821 ver):

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

I have the time to make these edits this week (by tomorrow at latest). I will need input from Brittany for 4-6 and Betsy for 3 and 8.

Let me know if you have already done this or what remains to be done.

Thanks,
Sue

From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Thursday, September 9, 2021 1:55 PM
To: Nagle, Deborah <Nagle.Deborah@epa.gov>
Cc: Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>; Weyer, Erica <weyer.erica@epa.gov>
Subject: For Deborah's review: GenX Response to public comments
Importance: High

Deborah,

This is the final document for your review supporting GenX. It is the response to public comments which changed from a previous version as the assessment changed. There are a few things we still need to clean up (some noted with comment bubbles) which you don't need to pay attention to:

- add EPA doc numbers;
- remove reference to PFAS Action Plan and replace with PFAS Roadmap, when available
- add in OGWDW responses (currently waiting to hear back)
- add in any corrections that OPPT or OLEM provide (email sent) on 4 comments pertaining to their programs
- add a statement about the outreach that was done (that we are about to launch; we are meeting tomorrow to strategize about the outreach.

Thanks for your review. And congratulations to Brittany, Greg and Sue for competing this document. It's almost over!

Please let me know if you want to see the track changes version of this.

Betsy

Appointment

From: Behl, Betsy [Behl.Betsy@epa.gov]
Sent: 10/7/2021 1:09:24 PM
To: Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]; Euling, Susan [Euling.Susan@epa.gov]; vladik_dorjets Ex. 6 Personal Privacy (PP) April.N.Kluever [April.N.Kluever Ex. 6 Personal Privacy (PP)

Subject: GenX toxicity assessment briefing for OMB
Location: zoom meeting below set up by OMB so we can share the presentation

Start: 10/13/2021 6:00:00 PM
End: 10/13/2021 6:30:00 PM
Show Time As: Tentative

Required Attendees: Jacobs, Brittany; Miller, GregoryG; Euling, Susan; vladik_dorjets Ex. 6 Personal Privacy (PP) Kluever, April N. EOP/OMB

Join Zoom Meeting

One tap mobile:

Meeting URL:
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Ex. 6 Personal Privacy (PP)

Join by Telephone

For higher quality, dial a number based on your current location.
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Meeting ID:

Passcode:

Ex. 6 Personal Privacy (PP)

International numbers

Join from an H.323/SIP room system

H.323:

Meeting ID:

Passcode:

SIP:

Passcode:

Ex. 6 Personal Privacy (PP)

Message

From: Akhter, Shamima [Akhter.Shamima@epa.gov]
Sent: 10/7/2021 8:08:03 PM
To: Jacobs, Brittany [jacobs.brittany@epa.gov]
CC: Miller, GregoryG [Miller.Gregory@epa.gov]; Euling, Susan [Euling.Susan@epa.gov]
Subject: RE: TT Lite Tech Edit of the GenX Response to Public Comment

Questions from TT:

We are making good progress on the documents you sent us earlier this week. We have a few questions for you about the GenX peer review document below.

1. Should we change the date of the document to October 2021?
2. Should we add any hyphens to the EPA document number (it's currently "822R21009" for this document and it's "822R-21-008" for the response to public comments document)?
3. We noticed that in the EPA responses, "uncertainty factor" and "UF" are used about half the time each. Should we change "uncertainty factor" to "UF" consistently in the responses?

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Tuesday, October 5, 2021 12:44 PM
To: Akhter, Shamima <Akhter.Shamima@epa.gov>
Cc: Miller, GregoryG <Miller.Gregory@epa.gov>; Euling, Susan <Euling.Susan@epa.gov>
Subject: TT Lite Tech Edit of the GenX Response to Public Comment
Importance: High

Hi Shamima,

This might sound like déjà vu, but I have another GenX document ready for a lite tech edit for Tetra Tech followed by 508 compliance. The lite tech edit will be very similar to the tech edit they completed on the assessment a few weeks ago. Tetra Tech did a thorough tech edit of this document a year ago, so I'm hoping this won't take too much time. I've uploaded the document to the teams page here and attached the linked document to this email.

Here is the technical direction:

- Tech edit and 508 compliance completed by October 13th

Please address the following items in the attached document:

- Formatting:
  - one font
  - make sure all call outs are accurate
  - standardized headings (some are all capitals some are not)
- Check grammar/verb tense
- Reference check (are all citations referenced? Are all citations standardized?)
- Change UFS and UFH to UF_S and UF_H (with subscripts)
- Update footer - should delete *draft* language

Once the tech edit is reviewed and okayed by EPA, please make the document 508 compliant.

Thanks so much Shamima and let me know if there are any questions.

All the best,

Brittany

Message

From: Akhter, Shamima [Akhter.Shamima@epa.gov]
Sent: 10/8/2021 12:46:49 PM
To: Jacobs, Brittany [jacobs.brittany@epa.gov]
CC: Euling, Susan [Euling.Susan@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: RE: GenX Lite Tech Edit Files

Thanks Brittany. I'll get back to you if TT has any questions.

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Friday, October 8, 2021 7:48 AM
To: Akhter, Shamima <Akhter.Shamima@epa.gov>
Cc: Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: GenX Lite Tech Edit Files
Importance: High

Hi Shamima, good morning,

Attached is the final GenX chemicals toxicity assessment for Tetra Tech. I also loaded it onto the teams site with the other documents. Below is updated technical direction for this document. Please let me know if there are any questions.

Updated Technical Direction for the GenX chemicals assessment – all items to be completed by COB October 13th

- Check edits made since the last lite tech edit (in track changes) for spelling/grammar/formatting errors. Accept the changes.
- Remove draft language from the headers.
- Perform one last read through of document to catch any spelling/grammar/formatting errors (if time allows).
- Check-in with EPA if there are any questions.
- Make document 508 compliant.

Thanks again for all of your help in getting these documents finalized!

All the best,
Brittany

From: Jacobs, Brittany
Sent: Tuesday, October 5, 2021 1:30 PM
To: Akhter, Shamima <Akhter.Shamima@epa.gov>
Cc: Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: GenX Lite Tech Edit Files

Thanks Shamima! I will follow up tomorrow or Thursday with an updated GenX final assessment and further direction. I will double check if any other technical edits need to be made and will provide that info for Tetra Tech or let them know if it is ready to go through 508 compliance.

From: Akhter, Shamima <Akhter.Shamima@epa.gov>
Sent: Tuesday, October 5, 2021 10:00 AM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>
Cc: Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: GenX Lite Tech Edit Files

TT's response below:

'I checked and confirmed that in the summer of 2020, we performed the reviews of the GenX assessment document in the TD you just sent us. For the most recent (September 2021) request for lite technical editing of the GenX assessment document, we checked and fixed call outs/number of tables, figures, and appendices; fixed the TOC; formatted the document, checked and updated references; and addressed comment bubbles in the document.

I checked the September 2021 lite tech edit TD and EPA did not request that we specifically perform a grammar check, units check, or QA/QC of table content. I'm not sure whether any of the information has changed since the July 2020 version of the document, but we would be happy to check anything that has been added, if needed.'

Please let me know if you have any questions or would like to have a call with them. Thanks.

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Tuesday, October 5, 2021 9:04 AM
To: Akhter, Shamima <Akhter.Shamima@epa.gov>
Cc: Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: GenX Lite Tech Edit Files

Hi Shamima,

For now the request is just to complete the tech edit on the response to the 2nd peer review document. The TD was written awhile back when I thought we were sending both at the same time. We are still deciding if the final assessment needs another tech edit. I believe Tetra Tech completed most of the requests in the TD for the final assessment during the "lite" tech edit. Can Tetra Tech let us know if this is true?

Thanks!
Britt

From: Akhter, Shamima <Akhter.Shamima@epa.gov>
Sent: Tuesday, October 5, 2021 8:58 AM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>
Cc: Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: GenX Lite Tech Edit Files

Question from TT:

'I have one initial question about the final assessment document that Brittany mentioned in the TD. Should we work from the most recent clean version we sent you (on 9/15/21) or is there a more recent version from EPA that we should use?'

Please confirm. Thanks.

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Tuesday, October 5, 2021 7:10 AM
To: Akhter, Shamima <Akhter.Shamima@epa.gov>
Cc: Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: GenX Lite Tech Edit Files
Importance: High

Hi Shamima,

I have another GenX document ready for tech edit. This is the response to the additional targeted peer review document. I have loaded it onto the Teams site (see here) that we created for the previous lite tech edit on the assessment document below. It should also be accessible to Sue through the linked document above since she has access to the Teams page. I have also re-attached the technical direction. I am asking that the tech edit on the response to peer review be completed by the end of the week (COB October 8th). Once we review and approve the tech edited document, we will ask Tetra Tech to make it 508 compliant.

Thanks so much Shamima and let me know if there are any questions or concerns.

All the best,
Brittany

From: Akhter, Shamima <Akhter.Shamima@epa.gov>
Sent: Wednesday, September 15, 2021 12:00 PM
To: Jacobs, Brittany <jacobs.brittany@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Cc: Euling, Susan <Euling.Susan@epa.gov>
Subject: FW: GenX Lite Tech Edit Files

Please see the email below from TT that they have uploaded files to the Teams site that Sue has created. Thanks.

From: Lanberg, Susan <Susan.Lanberg@tetratech.com>
Sent: Wednesday, September 15, 2021 11:57 AM
To: Akhter, Shamima <Akhter.Shamima@epa.gov>
Cc: Carlson, Krista <krista.carlson@tetratech.com>; rachel.buzzeo@tetratech.com; Cano, Amanda <AMANDA.CANO@tetratech.com>; John Hochheimer <john.hochheimer@tetratech.com>
Subject: GenX Lite Tech Edit Files

Hi Shamima,

I wanted to let you know that I just uploaded the clean and tracked changes versions of the GenX Chemicals Toxicity Assessment files to the Teams site that EPA set up. We just left two comments in the references section of the clean version as placeholders per EPA's request.

- 091321 DRAFT near final GenX Chemicals Toxicity Assessment_9.12_For TT Tech Edit_Clean.docx
- 091321 DRAFT near final GenX Chemicals Toxicity Assessment_9.12_For TT Tech Edit_TRCH.docx

Please let us know if you have any questions.

Thank you,

Sue

Susan Adair Lanberg | Senior Environmental Scientist, WTR QA Officer
Direct: (703) 385-1906, (703) 385-6000 ext 1906 | Fax: (703)385-6007
susan.lanberg@tetratech.com

Environmental Sciences
Innovative Solutions for Clean Water

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Message

From: Akhter, Shamima [Akhter.Shamima@epa.gov]
Sent: 10/8/2021 1:06:42 PM
To: Jacobs, Brittany [jacobs.brittany@epa.gov]
CC: Euling, Susan [Euling.Susan@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: FW: TT Lite Tech Edit of the GenX Response to Public Comment
Attachments: GenX Assessment Resp to Public Comments_For Tech Edit_10521_Clean.docx; GenX Assessment Resp to Public Comments_For Tech Edit_10521_TrCh.docx

Please see the attached files and the message below from TT.

'Attached please find a (nearly) clean version of the lite tech edited GenX response to public comments document, as well as a tracked changes version of the document. I had just left **one question for EPA about what version of the assessment was being referenced in the clean version**.'

Message

From: Akhter, Shamima [Akhter.Shamima@epa.gov]
Sent: 10/12/2021 11:46:55 AM
To: Jacobs, Brittany [jacobs.brittany@epa.gov]
CC: Euling, Susan [Euling.Susan@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: FW: Tech Edit of GenX Response to Peer Review Comments Document
Attachments: EPA_2nd Response to Peer Review_GenX_8.2021_clean.docx; EPA_2nd Response to Peer Review_GenX_8.2021_trch.docx

Please see the email below from TT and provide your response. The docs are almost ready for 508 complaint.

'Attached please find the lite tech edited and formatted version of the GenX response to peer review comments document. I've attached both a "clean" version and a tracked changes version. Note that the clean version has a few small edits in tracked changes in the background section for review. If you would prefer that we not change anything in the background section, we can reject these small edits before making the document 508-compliant. Please let us know what you would prefer and also if you have any questions or comments.'

Message

From: Miller, GregoryG [Miller.Gregory@epa.gov]
Sent: 10/18/2021 12:15:52 PM
To: Euling, Susan [Euling.Susan@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]
Subject: RE: add to rollout

If it's unclear, go with **fluoro** to be consistent with Hexa**fluoro**propylene Oxide (HFPO) Dimer Acid.

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Friday, October 15, 2021 4:36 PM
To: Miller, GregoryG <Miller.Gregory@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: FW: add to rollout

Do you think it is "fluromonomer" or "fluoromonomer"? I see both when I google them.

Sue

From: Flaherty, Colleen <Flaherty.Colleen@epa.gov>
Sent: Thursday, October 14, 2021 5:07 PM
To: Behl, Betsy <Behl.Betsy@epa.gov>
Cc: Euling, Susan <Euling.Susan@epa.gov>
Subject: RE: add to rollout

Here's the updated rollout

From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Thursday, October 14, 2021 10:28 AM
To: Flaherty, Colleen <Flaherty.Colleen@epa.gov>
Subject: add to rollout

OMB Technical working Group on PFAS	April Kleuver, Lead	april.n.kluever@ Ex. 6 Personal Privacy (PP) y	Betsy Behl

OMB asked for an email on the day of release. Please add to the rollout.

Elizabeth (Betsy) Behl, Director Health and Ecological Criteria Division,
Office of Science and Technology, Office of Water, EPA
Office: 202-566-0788
Cell: Ex. 6 Personal Privacy (PP)

Message

From: Akhter, Shamima [Akhter.Shamima@epa.gov]
Sent: 10/14/2021 12:29:32 PM
To: Jacobs, Brittany [jacobs.brittany@epa.gov]
CC: Euling, Susan [Euling.Susan@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: FW: Word docs_508-Compliant Versions of the GenX Response to Public Comments and Response to Peer Reviewer Comments Documents
Attachments: Final GenX Assessment Resp to Public Comments_Clean_for 508.docx; EPA_2nd Response to Peer Review_GenX_8.2021_clean_for 508.docx

From TT:

'Attached please find the final Word documents for the GenX response to public comments and response to peer review comments documents. I'll upload the final Word version of the GenX toxicity assessment document to EPA's Teams site next and let you know when it's available.'

Message

From: Akhter, Shamima [Akhter.Shamima@epa.gov]
Sent: 10/13/2021 11:25:32 PM
To: Jacobs, Brittany [jacobs.brittany@epa.gov]
CC: Euling, Susan [Euling.Susan@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: FW: 508-Compliant Versions of the GenX Response to Public Comments and Response to Peer Reviewer Comments Documents
Attachments: Final GenX Assessment Resp to Public Comments_508.pdf; EPA_2nd Response to Peer Review_GenX_508.pdf

From TT:

'Attached please find the 508-compliant versions of the GenX response to public comments and response to peer reviewer comments documents. We will plan on uploading the 508-compliant version of the toxicity assessment document soon.'

Message

From: Behl, Betsy [Behl.Betsy@epa.gov]
Sent: 10/19/2021 1:28:08 PM
To: Euling, Susan [Euling.Susan@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: GenX post release slides

<!--[if lte mso 15 || CheckWebRef]-->

Behl, Betsy has shared a OneDrive for Business file with you. To view it, click the link below.

Final Toxicity Assessment for GenX chems--public outreach 101921.pptx

<!--[endif]-->

Please let me know if you have changes to this and we can call it a wrap

Message

From: Flaherty, Colleen [Flaherty.Colleen@epa.gov]
Sent: 10/20/2021 1:13:17 PM
To: Lalley, Cara [Lalley.Cara@epa.gov]; Euling, Susan [Euling.Susan@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]
CC: Wadlington, Christina [Wadlington.Christina@epa.gov]
Subject: Final GenX Technical Fact Sheet
Attachments: GenX Final Tox Assess_TechnicalFactSheet_Final.docx

<!--[if lte mso 15 || CheckWebRef]-->

Flaherty, Colleen has shared a OneDrive for Business file with you. To view it, click the link below.

GenX Final Tox Assess_Fact Sheet_Public_for ODs.docx

<!--[endif]-->

Good morning!

I just read through the attached TECHNICAL fact sheet again, corrected a few typos, etc, and checked and formatted references. I think this one is DONE and ready to be pdf'd and 508'd. Please let me know if you concur and we can lock this one down!

The PUBLIC fact sheet is still in flux. I've incorporated David R's edits on the one drive version (attached), which is also the version that Christina is working on.

Thanks,
Colleen

Message

From: Miller, GregoryG [Miller.Gregory@epa.gov]
Sent: 10/21/2021 12:37:43 PM
To: Jacobs, Brittany [jacobs.brittany@epa.gov]; Euling, Susan [Euling.Susan@epa.gov]
Subject: RE: Need your input: GenX outreach slides
Attachments: Final Toxicity Assessment for GenX chems--public outreach 101921.pptx

See file attached. Made most of the edits. Slide 8 was going to have too much text with the additions so I simplified a bit.

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Thursday, October 21, 2021 8:14 AM
To: Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: Need your input: GenX outreach slides

See below. Greg will send the powerpoint that we both reviewed shortly.

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Wednesday, October 20, 2021 8:32 PM
To: Miller, GregoryG <Miller.Gregory@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: Need your input: GenX outreach slides

Hi Greg and Brittany,

I walked through Betsy's latest version of the "overview" high level briefing (attached) that she has been giving today. There are a couple of places to fill in for the post-release briefings. Could you help?:

1)

2)

Ex. 5 Deliberative Process (DP)

Also could you take a look at Slide 8, which is a text version of the info in the Conceptual Model? My suggestion would be for the slide to have this change:

Ex. 5 Deliberative Process (DP)

Any other changes you suggest to the slides? One thing that feels missing to me is a more detailed description of the constellation of liver effects. Agree/disagree?

Ex. 5 Deliberative Process (DP)

I would appreciate your review.

Thanks,
Sue

From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Wednesday, October 20, 2021 4:54 PM
To: Euling, Susan <Euling.Susan@epa.gov>
Subject: GenX

Elizabeth (Betsy) Behl, Director Health and Ecological Criteria Division,
Office of Science and Technology, Office of Water, EPA
Office: 202-566-0788
Cell: Ex. 6 Personal Privacy (PP)

Talking Points for GenX Toxicity Values
- Co-regulators and Water Utilities -

Overview

- On October 18th, 2021, Administrator Michael S. Regan announced EPA's PFAS Strategic Roadmap, which lays out the agency's planned actions and timelines for safeguarding public health, protecting the environment, and holding polluters accountable.

GenX Toxicity Assessment

- Under this roadmap, on October XX, 2021, EPA released/will release the final GenX chemicals toxicity assessment.
- The GenX chemicals toxicity assessment is the first step towards understanding potential health risks from GenX chemicals in drinking water.
- Additional information on drinking water exposures and sources is needed to understand the public health impact from GenX chemicals in drinking water and EPA is actively working to develop this information.
- The GenX chemicals toxicity assessment provides a first step toward EPA developing a national drinking water Health Advisory and EPA is committed to publishing drinking water Health Advisories for GenX chemicals in Spring 2022.
- Health Advisories provide information on contaminants that can cause human health effects and are known or anticipated to occur in drinking water.
- EPA Health Advisories are non-enforceable and non-regulatory drinking water concentrations and provide technical information to tribes, states agencies and other public health officials on health effects, analytical methodologies, and treatment technologies associated with drinking water contamination.
- Once published, EPA's drinking water Health Advisory for GenX chemicals will enable tribes, states, and local governments to take appropriate action to protect their drinking water resources.

National Primary Drinking Water Regulation

- EPA is also currently developing a National Primary Drinking Water Regulation (NPDWR).
- In the context of this effort, the agency is also exploring regulatory approaches for additional PFAS compounds, which may include GenX chemicals, as supported by best available science.
- EPA will consider the final GenX chemicals assessment and other science in addition to public comment and stakeholder input to inform how it considers GenX as part of that regulatory process.

Communities Affected by GenX Chemicals

- EPA has actively begun to reach out to states that may have concerns about GenX chemicals in their drinking water and the agency is committed to working with state agencies and drinking water systems on solutions to address public health risks.
- At this time, EPA's understanding is that GenX chemicals in drinking water is a significant concern in certain locations and that the states, local governments, and drinking water utilities in these locations are typically taking proactive steps to monitor and even mitigate GenX chemicals in drinking water.
- EPA will continue to work closely with impacted federal, state, tribal, and local partners to provide technical assistance as they consider the final GenX chemicals toxicity values.
- EPA will also continue to work with states and others to determine how widespread occurrence of GenX chemicals may be, including collecting nationwide monitoring data as proposed under the UCMR5 monitoring program.

Drinking Water Systems

- Drinking water systems that find PFAS in their drinking water should take steps to inform customers, assess your water and if necessary, limit exposure.
- EPA is working to understand human health risks associated with GenX chemicals found in drinking water and our first step was to develop the GenX chemicals toxicity assessment. Additional information is needed to

understand human health risks from drinking water exposures to GenX chemicals, which EPA is working to develop.

- There are ways to reduce risks from PFAS, including GenX chemicals, in the short and long-term. Some treatment systems have developed or are developing the capacity to remove GenX from their finished drinking water.
- While installing new treatment systems take time, some systems have been proactively building the capacity to remove PFAS, including GenX chemicals and other contaminants, with technologies such as installation of granular activated carbon, and ion exchange. In addition to certain treatment technologies that are effective at the treatment plant, some point of use devices have been demonstrated to remove some PFAS at the tap.

Details for Drinking Water Systems

- If water sampling results show the presence of Gen X chemicals in drinking water, EPA recommends that water systems quickly undertake additional sampling to assess the level, scope and localized source of contamination to inform next steps. EPA also recommends that water systems work with state authorities to determine if they have guidance on concentrations of GenX that may represent levels of concern.
- Drinking water systems and public health officials should also promptly provide consumers with information about the levels of PFAS in their drinking water.
- A number of options are available to drinking water systems to lower concentrations of PFAS, including GenX chemicals, in the drinking water supply. In some cases, drinking water systems may be able to reduce concentrations of PFAS, including GenX chemicals, for example, by closing contaminated wells or changing the rates of blending of water sources, where the available quantity of drinking water is not compromised.
- Alternatively, public water systems can treat source water with activated carbon, ion exchange resins, or high-pressure membrane systems (e.g., reverse osmosis) to remove GenX chemicals from drinking water. These treatment systems are used by some public water systems today but should be carefully designed and maintained to ensure that they are effective for treating PFAS. In some communities, entities have provided bottled water to consumers while steps to reduce or remove PFAS from drinking water or to establish a new water supply are completed.

For the Public

- EPA is working to understand what levels of GenX chemicals found in drinking water are of concern for public health and our first step was to develop the GenX chemicals toxicity assessment. Additional information is needed to understand the human health risks when GenX chemicals are found in drinking water. EPA is working on the science to understand these risks.
- If you are concerned about GenX chemicals in your drinking water, EPA recommends you contact your local water utility to learn more about your drinking water and to see whether they have monitoring data for GenX chemicals or can provide any specific recommendations for your community.
- If you own a private well, EPA recommends learning more about how to protect and maintain your well for all contaminants of concern. For information on private wells visit: [HYPERLINK "http://www.epa.gov/safewater"]

Message

From: Lalley, Cara [Lalley.Cara@epa.gov]
Sent: 10/22/2021 3:48:51 PM
To: Jacobs, Brittany [jacobs.brittany@epa.gov]; Euling, Susan [Euling.Susan@epa.gov]; Wadlington, Christina [Wadlington.Christina@epa.gov]; Flaherty, Colleen [Flaherty.Colleen@epa.gov]
Subject: RE: Input needed for PFAS webpage update

I can show you via Teams if you want to call me, Brittany.

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Friday, October 22, 2021 11:46 AM
To: Euling, Susan <Euling.Susan@epa.gov>; Wadlington, Christina <Wadlington.Christina@epa.gov>; Flaherty, Colleen <Flaherty.Colleen@epa.gov>; Lalley, Cara <Lalley.Cara@epa.gov>
Subject: RE: Input needed for PFAS webpage update

Oaky, don't think I can see where the assessments are posted, just see the page that links to them.

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Friday, October 22, 2021 10:00 AM
To: Wadlington, Christina <Wadlington.Christina@epa.gov>; Flaherty, Colleen <Flaherty.Colleen@epa.gov>; Lalley, Cara <Lalley.Cara@epa.gov>
Cc: Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: RE: Input needed for PFAS webpage update

Brittany,

Here are the sites and how to access.

Sue

From: Wadlington, Christina <Wadlington.Christina@epa.gov>
Sent: Friday, October 22, 2021 9:52 AM
To: Flaherty, Colleen <Flaherty.Colleen@epa.gov>; Euling, Susan <Euling.Susan@epa.gov>; Lalley, Cara <Lalley.Cara@epa.gov>
Subject: RE: Input needed for PFAS webpage update

Ex. 6 Personal Privacy (PP)

If you can't see the changes, click "Revisions" and see the one from today with my user ID.

From: Flaherty, Colleen <Flaherty.Colleen@epa.gov>
Sent: Friday, October 22, 2021 9:52 AM
To: Wadlington, Christina <Wadlington.Christina@epa.gov>; Euling, Susan <Euling.Susan@epa.gov>; Lalley, Cara <Lalley.Cara@epa.gov>
Subject: RE: Input needed for PFAS webpage update

Thanks, Christina! How do you log in to access them?

From: Wadlington, Christina <Wadlington.Christina@epa.gov>
Sent: Friday, October 22, 2021 9:43 AM
To: Euling, Susan <Euling.Susan@epa.gov>; Flaherty, Colleen <Flaherty.Colleen@epa.gov>; Lalley, Cara <Lalley.Cara@epa.gov>
Subject: RE: Input needed for PFAS webpage update

Here are the current links

Ex. 6 Personal Privacy (PP)

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Friday, October 22, 2021 8:31 AM
To: Flaherty, Colleen <Flaherty.Colleen@epa.gov>; Lalley, Cara <Lalley.Cara@epa.gov>
Cc: Wadlington, Christina <Wadlington.Christina@epa.gov>
Subject: RE: Input needed for PFAS webpage update

Thanks Colleen. Your edits look great.

For the links, I don't know why the header says "Toxicity." I went to the PFBS webpage and see that they have three sections of links, as follows. Is GenX following the same format?

Communication Materials

- Fact Sheet: Toxicity Assessment for PFBS (4 pp, 104 K, About PDF)
- Technical Fact Sheet: Toxicity Assessment for PFBS (7 pp, 221 K, About PDF)
- Press Release announced the final Human Health Toxicity Assessment for PFBS (Apr 8, 2021)

Toxicity Assessments

- Final Report & Supporting Materials for the 2021 Human Health Toxicity Assessment for PFBS

Draft Reports & Supporting Materials

- Report & Supporting Materials for the 2018 draft Human Health Toxicity Assessment for PFBS

See comments and revisions below:

From: Flaherty, Colleen <Flaherty.Colleen@epa.gov>
Sent: Friday, October 22, 2021 8:21 AM
To: Lalley, Cara <Lalley.Cara@epa.gov>; Euling, Susan <Euling.Susan@epa.gov>
Cc: Wadlington, Christina <Wadlington.Christina@epa.gov>
Subject: RE: Input needed for PFAS webpage update

See below in blue

From: Lalley, Cara <Lalley.Cara@epa.gov>
Sent: Thursday, October 21, 2021 8:07 PM
To: Euling, Susan <Euling.Susan@epa.gov>
Cc: Wadlington, Christina <Wadlington.Christina@epa.gov>; Flaherty, Colleen <Flaherty.Colleen@epa.gov>
Subject: Input needed for PFAS webpage update

Ex. 5 Deliberative Process (DP)

Christina – I don't know if Angela did it already, but we also need a draft updated EPA PFAS Data and Tools page on the PFAS site that includes a link for the GenX assessment, as follows:

Toxicity Assessment & Supporting Materials

- GenX Chemicals Studies
- Human Health Toxicity Assessment for GenX Chemicals

Other PFAS Toxicity Assessments

- Human Health Toxicity Assessment for PFBS

Not sure why we would provide links to these two websites but I have no objection to including them as "Related Links" if someone wants them included:

- Health & Environmental Research Online (HERO)
- Toxics Release Inventory

Thanks so much!

¸.•´¯`•.¸><((((º> .•´¯`•.><((((º>.•´¯`•.><((((º>.•´¯`•.

Cara Lalley
Communications & Congressional Coordinator
Office of Science & Technology
U.S. EPA Office of Water
Desk: 202-566-0372
Work cell: 202-288-9435

Message

From: Nagle, Deborah [Nagle.Deborah@epa.gov]
Sent: 10/25/2021 5:04:09 PM
To: Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]; Lalley, Cara [Lalley.Cara@epa.gov]; Flaherty, Colleen [Flaherty.Colleen@epa.gov]; Euling, Susan [Euling.Susan@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]
Subject: RE: EPA Announces release of toxicity assessment for GenX chemicals

Betsy – Thank you for your leadership and doing the harder right to produce a quality Toxicity Assessment that reflects positively on EPA. It is not lost on me that you went up against some heavy hitters inside and outside the Agency to finalize the assessment in its current form –Thank you.

Brittany and Greg – I want to add my congratulations on the release of the GenX Chemicals Tox Assessment. You should be very proud of this great accomplishment. I know it has not been easy, but you persevered and end product is quality work. Thank you.

Jamie Strong – You started this assessment under your leadership, thanks for setting the work up for success.

Sue Euling --- You jumped in the middle of the fire and kept the assessment on track – I am grateful for your leadership to bring this assessment to completion.

Cara and Colleen – It is never over until the Comms are done. Thank you for your persistence in making sure the message we wanted was the one released today.

AWESOME work team. I am proud of all of you.

-Deborah

From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Monday, October 25, 2021 11:52 AM
To: OST-HECD <OSTHECD@epa.gov>
Cc: Lalley, Cara <Lalley.Cara@epa.gov>; Nagle, Deborah <Nagle.Deborah@epa.gov>
Subject: EPA Announces release of toxicity assessment for GenX chemicals

Greetings HECD,

I am thrilled to announce that the GenX chemicals toxicity assessment is now live. Congratulations especially to Brittany Jacobs and Greg Miller for their hard work in developing this toxicity assessment, the third assessment for PFAS chemicals developed by HECD of the four released by EPA. Many thanks to Sue Euling and Jamie Strong for their leadership through the development (which was not easy) and to Colleen Flaherty and Cara Lalley for developing super comms documents and navigating the launch (which was really not easy).

We should all be very proud of this!

Betsy

This is the official announcement that was just sent out:

As part of EPA's Strategic Roadmap to address per- and polyfluoroalkyl substances (PFAS), the agency has released the final human health toxicity assessment for Hexafluoropropylene Oxide (HFPO) Dimer Acid and its Ammonium Salt (referred to as "GenX chemicals"). The GenX chemicals assessment is part of EPA's efforts to increase the amount of information that is publicly available on chemicals in the PFAS class. The assessment presents a critical review of the available human health effects information on GenX chemicals.

To view the press release, go to: https://www.epa.gov/newsreleases/epa-announces-key-step-advance-science-better-protect-communities-pfas-pollution
To view the final human health toxicity assessment for GenX Chemicals and related materials, go to: https://www.epa.gov/chemical-research/human-health-toxicity-assessments-genx-chemicals

If you have questions please contact Susan Euling (euling.susan@epa.gov)

Elizabeth (Betsy) Behl, Director Health and Ecological Criteria Division,
Office of Science and Technology, Office of Water, EPA
Office: 202-566-0788
Cell: Ex. 6 Personal Privacy (PP)

Appointment

From: Matthews, Lisa [Matthews.Lisa@epa.gov]
Sent: 10/25/2021 5:34:57 PM
To: EPA ECOS ASTHO Bimonthly PFAS Call [EPA_ECOS_ASTHO_Bimonthly_PFAS_Call@epa.gov]; Buerk, Emma [Buerk.Emma@epa.gov]; Hanley, Adrian [Hanley.Adrian@epa.gov]; Tom Phillips [tom.phillips@maryland.gov]; robert.murphy@state.co.us; Smith, Brian [Smith.Brian@epa.gov]; Euling, Susan [Euling.Susan@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Burneson, Eric [Burneson.Eric@epa.gov]; Boucher, Aimee [Boucher.Aimee@epa.gov]; Aaron.Mealy@dnr.mo.gov

Subject: PFAS Science Call with ECOS and ASTHO
Attachments: Agenda_October 25 PFAS call.pdf; Watkins_EPA PFAS Strategic Roadmap.pdf; Hanley_Draft EPA Method 1633.pdf; BehL_Release of final toxicity assessment for GenX chemicals.pdf
Location: Microsoft Teams Meeting

Start: 10/25/2021 8:00:00 PM
End: 10/25/2021 9:15:00 PM
Show Time As: Tentative

Required Attendees: EPA ECOS ASTHO Bimonthly PFAS Call; Buerk, Emma; Hanley, Adrian; Tom Phillips -MDA-; robert.murphy@state.co.us; Smith, Brian; Euling, Susan; Jacobs, Brittany; Burneson, Eric; Boucher, Aimee; Aaron.Mealy@dnr.mo.gov

Attached are the agenda and presentations for today's call. Please note that the call has been extended until 5:15 pm.

EPA's Office of Research and Development (ORD) hosts a bimonthly call with ECOS and ASTHO members and staff on PFAS science. These calls are an opportunity for EPA scientists and our state partners to share science and technical information related to PFAS. Topics include analytical methods, human health and toxicity, site characterization, exposure and remediation, and treatment. If you would like to present on an upcoming call, please contact Lisa Matthews. If you would like to be added to the email distribution list for these calls, please send requests to Erin McCabe.

Lisa Matthews
Senior Advisor and State Liaison
US EPA Office of Research and Development
202-564-6669

Microsoft Teams meeting

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Appointment

From: Akhter, Shamima [Akhter.Shamima@epa.gov]
Sent: 10/26/2021 7:44:40 PM
To: Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]; Euling, Susan [Euling.Susan@epa.gov]; Flaherty, Colleen [Flaherty.Colleen@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]

Subject: FSTRAC Webinar on EPA's Final Human Health Toxicity Values for GenX Chemicals

Start: 11/4/2021 4:45:00 PM
End: 11/4/2021 6:00:00 PM
Show Time As: Tentative

Recurrence: (none)

Required Attendees: Jacobs, Brittany; Miller, GregoryG; Euling, Susan; Flaherty, Colleen; Behl, Betsy

Agenda for FSTRAC Webinar Scheduled for Thursday, November 4, 2022, from 1:00 – 2:00 p.m., Eastern time

- Welcome and Introduction
- Recent release of EPA's final Toxicity Assessment for GenX Chemicals - Brittany Jacobs, Ph.D., OW/EPA

On October 25th, the U.S. Environmental Protection Agency (EPA) released the final human health toxicity assessment for Hexafluoropropylene Oxide (HFPO) Dimer Acid and its Ammonium Salt (referred to as "GenX chemicals"). The final GenX chemicals assessment is part of EPA's efforts to increase the amount of information that is publicly available on chemicals in the PFAS class noted in EPA's Strategic Roadmap to address per- and polyfluoroalkyl substances (PFAS). The assessment presents a critical review of the available human health effects information on GenX chemicals. The assessment provides hazard identification, dose-response information, and derives toxicity values called oral reference doses (RfDs) for chronic and subchronic exposures. A toxicity assessment is a written summary of the potential health effects associated with a chemical and is similar to assessments developed under EPA's Integrated Risk Information System (IRIS). EPA plans to use this toxicity assessment and information on exposure, analytical methods and treatment to develop a Drinking Water Health Advisory in the spring of 2022. Link to the assessment: https://www.epa.gov/chemical-research/human-health-toxicity-assessments-genx-chemicals

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Message

From: Behl, Betsy [Behl.Betsy@epa.gov]
Sent: 11/1/2021 2:24:46 PM
To: Jacobs, Brittany [jacobs.brittany@epa.gov]; Euling, Susan [Euling.Susan@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]
CC: Snowden, Belinda [snowden.belinda@epa.gov]
Subject: RE: GenX briefings this week -- getting organized

Set up for later today. Info in tabular form below:

date	*group*	*time*	*presenter*	
11/1	NGOs	3:30 pm		Betsy will attend
11/2	water stakeholders (AWWA, NACWA, etc)	2:30pm		Betsy will attend
	EPA/OECA	4:30 pm		Betsy will attend
	CHPAC	5:00 pm	Greg	Betsy will not attend
11/3	OMB/Interagency Technical Workgroup (TWG)	1:00 pm	Brittany	Betsy will attend the beginning
11/4	FSTRAC	12:45 pm	Brittany	Betsy will not attend
reschedule	OLEM regional call			
reschedule	ASTSWMO			
week of 11/8?	public meeting			

From: Jacobs, Brittany <jacobs.brittany@epa.gov>
Sent: Monday, November 1, 2021 9:47 AM
To: Behl, Betsy <Behl.Betsy@epa.gov>; Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>
Subject: RE: GenX briefings this week -- getting organized

Can we have a quick chat to go through these? Lots of moving pieces with different presenters, want for technical back-up for some, etc.

From: Behl, Betsy <Behl.Betsy@epa.gov>
Sent: Monday, November 1, 2021 9:21 AM
To: Euling, Susan <Euling.Susan@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: RE: GenX briefings this week -- getting organized

1) **Ex. 5 Deliberative Process (DP)**

Ex. 5 Deliberative Process (DP)

Lets talk about who is going to present at these meetings. I am fine doing an intro and having others present.

Elizabeth (Betsy) Behl, Director Health and Ecological Criteria Division,
Office of Science and Technology, Office of Water, EPA
Office: 202-566-0788
Cell: Ex. 6 Personal Privacy (PP)

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Sunday, October 31, 2021 11:01 PM
To: Behl, Betsy <Behl.Betsy@epa.gov>; Miller, GregoryG <Miller.Gregory@epa.gov>; Jacobs, Brittany <jacobs.brittany@epa.gov>
Subject: GenX briefings this week -- getting organized

This is what I have –

a. 11/1: NGOs – Sue or Betsy
b. 11/2: ASTSWMO (2:30pm) – Sue ; Joe Theis – what organization? (4:30pm) - Sue; CHPAC Meeting presentation (5pm) - Greg
c. 11/3: OMB/Interagency Technical Workgroup (TWG) -Brittany
d. 11/4: FSTRAC – Brittany

Betsy, please let me know whether I am presenting the 11/1 NGO briefing.

Brittany or Greg – could one of you please attend the 11/1 and first two 11/2 briefings for technical questions? Could you two coordinate?

I will be attending all.

Thanks,
Sue

Message

From: Cunningham, Kelly [cunningham.kelly@epa.gov]
Sent: 9/17/2021 1:34:17 PM
To: Euling, Susan [Euling.Susan@epa.gov]
Subject: RE: Contacts for GenX Meeting

Ok great!

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Friday, September 17, 2021 9:33 AM
To: Cunningham, Kelly <cunningham.kelly@epa.gov>
Subject: RE: Contacts for GenX Meeting

No you are all good.

I talked to her about it and she wanted to include R2 in outreach because of the interest that NJ has in PFAS in general.

Your table stands uncorrected!

Sue

From: Cunningham, Kelly <cunningham.kelly@epa.gov>
Sent: Friday, September 17, 2021 7:54 AM
To: Euling, Susan <Euling.Susan@epa.gov>
Subject: RE: Contacts for GenX Meeting

According to the table it's only the 3 regions. The notes for NJ say "they are looking into GenX tox now". For NY I have a question mark because Betsy's e-mail said "I also understand that NY may be doing something in the future."

Perhaps Betsy has discovered new information since I last edited the table?

Kelly

From: Euling, Susan <Euling.Susan@epa.gov>
Sent: Thursday, September 16, 2021 4:36 PM
To: Cunningham, Kelly <cunningham.kelly@epa.gov>
Subject: RE: Contacts for GenX Meeting

I think she may be thinking of Region 2 – NJ and NY with their activity in GenX values but no final values as of yet? Thoughts?

From: Euling, Susan
Sent: Thursday, September 16, 2021 4:27 PM
To: Cunningham, Kelly <cunningham.kelly@epa.gov>
Subject: RE: Contacts for GenX Meeting

Hi Kelly,

Betsy is under the impression that there are 4 regions with GenX values. You have 3 regions listed. Am I missing one?

Sue

From: Cunningham, Kelly <cunningham.kelly@epa.gov>
Sent: Wednesday, September 15, 2021 1:03 PM
To: Euling, Susan <Euling.Susan@epa.gov>
Subject: Contacts for GenX Meeting

Hi Sue,

Here are the states with GenX numbers, their region number, and contact information. I listed the EPA contact associated with the region, not necessarily with that state. They are also highlighted in orange in the attached table.

Let me know if you have any questions.

Kelly

State	Region	EPA Contact	Other Contact
4	North Carolina	Aaryn Jones, Special Assistant Immediate Office, Office of the Regional Administrator, Region 4, U.S. EPA; Cell: Ex. 6 Personal Privacy (PP) jones.Aaryn@epa.gov	Sushma Masemore, P.E. Assistant Secretary N.C. DEQ 919-707-8700 (O) ; 9 Ex. 6 Personal Privacy (PP) sushma.masemore@ncdenr.gov
5	Illinois	Amy Kleiv, Manager, OEPA Division of Drinking and Groundwater 614-644-2871; Amy.klei@epa.ohio.gov	Carol Hawbaker, Office of Toxicity Assessment Illinois Environmental Protection Agency; 217-558-3351; carol.hawbaker@illinois.gov
	Indiana		Matt Prater, Manager, IDEM-Drinking Water Branch; 317-234-7437; mprater@idem.in.gov
	Michigan		Jennifer Gray, Senior Toxicologist, MDHHS; grayj@michigan.gov;517-281-3483 Kory Groetsch, Division Director, MDHHS; Groetschk@michigan.gov; 517-284-4804
	Ohio		
	Wisconsin		Meghan Williams, Environmental Toxicologist WDNR (lead for human health criteria for PFOS-PFOA) MeghanC3.Williams@wisconsin.gov; 608-267-7654
9	Hawaii	Matt Small; R9 RSL and Acting STL; Small.Matthew@epa.gov	Roger Brewer; roger.brewer@doh.hawaii.gov

State	EPA Region	Value	Developing or Final?	Use	Primary Source	Additional Source Provided by Contact
HI	9	160 ppt	final	Environmental Action Level.	[HYPERLINK "https://health.hawaii.gov/heer/files/2020/12/PFASs-Techncal-Memo-HDOH-Dec-2020.pdf"]	N/A
IL	5	560 ppt	Not clear	Guidance value	[HYPERLINK "https://www2.illinois.gov/epa/topics/water-quality/pfas/Pages/pfas-mcl.aspx"]	N/A
IN	5	>700 ppt	Not clear	Monitoring guidance	N/A	N/A
MI	5	370 ppt	final	State MCL	[HYPERLINK "http://169.62.82.226/documents/pfasresponse/Health-Based_Drinking_Water_Value_Recommendations_for_PFAS_in_Michigan_Report_659258_7.pdf"]	[HYPERLINK "https://www.michigan.gov/pfasresponse/0,9038,7-365-95571_95577_106298---,00.html"]
NC	4	140 ppt	draft	Provisional health goal	[HYPERLINK "https://files.nc.gov/ncdeq/Energy%20Mineral%20and%20Land%20Resources/DEMLR/SAB-GenX-Report-FINAL-Appendices-10-30-2018.pdf"]	[HYPERLINK "https://epi.dph.ncdhhs.gov/oee/pfas/NC%20DHHS%20Health%20Goal%20Q&A.pdf"]
NJ	2	TBD	Pre-draft	TBD	N/A	N/A
OH	5	>700	final	Monitoring	[HYPERLINK "https://epa.ohio.gov/Portals/28/documents/pfas/PFA	N/A

		ppt		guidance	S-Technical-Information-Supporting-Documentation.pdf"]	
WI	5	300 ppt	final	Recommended GW enforcement standard	[HYPERLINK "https://www.dhs.wisconsin.gov/publications/p02807.pdf"]	[HYPERLINK "https://www.dhs.wisconsin.gov/chemical/pfas.htm"]

Appointment

From: Snowden, Belinda [snowden.belinda@epa.gov]
Sent: 11/1/2021 6:10:36 PM
To: ScottL@astswmo.org; DaniaR@astswmo.org; Euling, Susan [Euling.Susan@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]; Rodgers-Jenkins, Crystal [Rodgers-Jenkins.Crystal@epa.gov]; Burneson, Eric [Burneson.Eric@epa.gov]

Subject: Final toxicity value for GenX chemicals (a PFAS chemical): Briefing to ASTSWMO
Location: Microsoft Teams Meeting

Start: 11/4/2021 2:00:00 PM
End: 11/4/2021 3:00:00 PM
Show Time As: Tentative

Required Attendees: ScottL@astswmo.org; DaniaR@astswmo.org; Euling, Susan; Jacobs, Brittany; Miller, GregoryG; Rodgers-Jenkins, Crystal; Burneson, Eric

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Message

From: Flaherty, Colleen [Flaherty.Colleen@epa.gov]
Sent: 11/1/2021 8:21:24 PM
To: Behl, Betsy [Behl.Betsy@epa.gov]; Euling, Susan [Euling.Susan@epa.gov]; Jacobs, Brittany [jacobs.brittany@epa.gov]; Miller, GregoryG [Miller.Gregory@epa.gov]
Subject: EPA's GenX Assessment Could Preview Strict New Limits For PFOA, PFOS

https://insideepa.com/tsca-news/epa-s-genx-assessment-could-preview-strict-new-limits-pfoa-pfos?s=na

EPA's GenX Assessment Could Preview Strict New Limits For PFOA, PFOS

November 1, 2021

EPA's risk assessment of GenX, a widely used per- and polyfluoroalkyl substance (PFAS), adopts an approach that observers say could also support tough limits on the more widely-studied PFAS known as PFOA and PFOS -- which one environmentalist says "could have enormous implications" as EPA is already considering new assessments for them.

EPA's Oct. 25 assessment of GenX sets the agency's most stringent reference dose (RfD) -- the largest daily ingestion rate estimated to be free of health risks -- for any PFAS the agency has assessed, but also notes that the figures it set for PFOA and PFOS in 2016 are subject to change because the agency is reviewing them.

"That's pretty telling," David Andrews, a senior scientist with Environmental Working Group (EWG), tells *Inside TSCA*. "It could have enormous implications in setting cleanup standards and drinking water standards." EPA's RfDs are commonly used by other programs, agencies and even private authorities to inform risk-management policies.

In particular, the agency's recently-released PFAS "roadmap" calls for final action on PFOA and PFOS drinking water standards by fall 2023, and those rulemakings are sure to rely heavily on the most current findings regarding safe exposure levels.

"Based on the approaches they have taken within this assessment and what we've seen in the scientific literature and from other regulatory agencies, boards and states, the expectation is that there is a reasonable probability that the chronic RfDs for PFOA and PFOA would be lowered" if EPA does reassess those chemicals, Andrews said.

And he added that while the results of a new assessment would depend on the scientific decisions EPA would make in crafting it and the types of data it prioritizes, tighter RFDs would fit the trend of increasingly strict state PFAS limits in drinking water and other media.

For instance, he pointed to an August 2020 journal article reviewing PFAS assessment values published in the journal *Environmental Toxicology & Chemistry* by Gloria Post, a toxicologist with New Jersey's environmental department who has long studied PFAS, as well as California's recently announced public health goal (PHG) for PFOA as "context of where the states have gone."

Post's journal article "summarized the last 20 years of PFOA and PFOS assessments and guidelines and established values by states. It shows decreasing values with respect to time," Andrews said. The article notes that several states have concluded that EPA's 70 nanogram/liter (ng/L) advisory levels "are not sufficiently protective" and have issued their own more-stringent limits for not only those specific chemicals but other PFAS.

Even outside of state agencies, Post writes, "the US Agency for Toxic Substances and Disease Registry (2018) and the European Food Safety Authority (2020) have developed toxicity factors for PFOA and PFOS that are approximately an order of magnitude lower than the USEPA's." And she notes that EPA's 2016 RfD for the two chemicals was itself a tightening of an existing risk value -- namely a 400 ng/L interim figure that the agency set in 2009.

California's PHG

Andrews points in particular to California's proposed public health goals (PHGs) for the two chemicals, released in July, as another indicator that agencies at all levels have imposed more stringent limits on PFAS as they gain more information on the chemicals.

California's environmental hazard office has proposed a PHG for PFOA of 7 parts per quadrillion (ppq) for PFOA, and 1 part per trillion, or ppt, for PFOS, starting multi-year rulemaking processes for each.

Andrews said that part of what drove those strict figures was regulators' "consideration and use of human epidemiology data, which is something that EPA has noted but really stayed away from in deriving that value." The human data is "an indication of how potentially toxic these chemicals are at very low concentrations," Andrews added. "Getting down to under 1 in 1 million cancer risk may involve" a standard at the ppq level.

Whether a future re-assessment of PFOA and PFOS follows the strict model set by the GenX RFD could depend on which studies EPA uses as the basis for its findings. "[T]he big question is how much EPA considers human epidemiology evidence as there are now multiple assessments relying on different human epidemiology studies and evidence of harm," Andrews said.

In its response to comments document for the GenX assessment, EPA signaled that such studies were not the decisive factor in its decision to tighten its final RfD to 3×10^-6 milligrams per kilogram bodyweight per day (mg/kg-day) -- an order of magnitude stricter than the proposed value of 8×10^-6 mg/kg-day. This is likely because there is far less information available about the newer GenX than PFOA and PFOS.

Specifically, the agency wrote, the key was its decision to increase the assessment's uncertainty factors -- multipliers of up to 10 that regulatory agencies use to increase the conservativism of RfDs to account for various types of uncertainty in their calculations. Regulators can use uncertainty factors to make up for unknowns due to limited data, or to represent the unknown differences in humans' and lab animals' responses to chemicals, among other issues.

EPA notes in its response to comments that Pennsylvania and Minnesota regulatory agencies and other environmental groups urged EPA to increase its database uncertainty factor (UFD) from 3 to 10, while the American Chemistry Council (ACC) urged EPA to reduce it from 3 to 1.

Other commenters, including Minnesota and New Jersey agencies, sought other increases, including to address the uncertainty surrounding conversion from subchronic data to a chronic RfD, which EPA also agreed with.

Those decisions have already prompted push-back from industry. A spokeswoman for Chemours, the company that manufactures GenX, tells *Inside TSCA* that company officials "are unaware of data that would support the conclusions drawn by the agency.

"We're reviewing the information for additional insight into the new review process used by the agency and the new data the agency utilized for the change from its 2018 draft assessment, including the application of revised uncertainty factors to reflect greater uncertainty even though the agency indicates there is additional data since the draft assessment."

And an ACC spokesman said officials at that group "are very concerned that all relevant data was not reviewed and applied to this assessment, and that there appears to be a lack of a consistent approach to these assessments when comparing to other chemistries," such as the PFAS known as PFBS and PFBA.

"Taken together this might indicate why in this assessment, EPA determined a chronic reference dose 25 times lower than what was in their 2018 draft and what [Michigan] developed in 2019, and 30 times lower than what [North Carolina] developed in 2018. We support strong, science based chemical regulation but believe the best available science needs to be applied consistently when assessing chemistries for health and environmental effects," the spokesperson said.

EPA explains in the response to comments document that it decided to increase the database uncertainty factor because it agreed with commenters that even though newer studies of GenX suggest it causes reproductive or developmental harms, there was no animal study across multiple generations that could confirm or deny those fears.

"The intended purpose of the UFD is to address the possibility that a lower reference value might result if additional data were available. EPA bases its decisions on the specific toxicity information that is lacking from the database at the time of the assessment," the agency writes. -- *Maria Hegstad* (mhegstad@iwpnews.com)