To: DeCair, Sara[DeCair.Sara@epa.gov]
Cc: Hernandez-Quinones, Samuel[hernandez.samuel@epa.gov]
From: Christ, Lisa
Sent: Thur 11/13/2014 9:37:49 PM
Subject: read ahead materials for Deputy Administrator
Background for Deputy Administrator 11_20_14.docx

~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

Lisa Christ, Chief

Targeting and Analysis Branch

Office of Ground Water and Drinking Water

USEPA

1200 Pennsylvania Ave NW
Washington, DC 20460-0001
phone: 202.564.8354
fax: 202.564-3760

Mail Code: 4607M
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

To: Lisa Christ[Ex. 6 - Personal Privacy]
From: Christ, Lisa
Sent: Fri 10/24/2014 6:31:12 PM
Subject: Fw: Materials for Kopocis Pre-Brief
V2 -KKopocis Pre-Brief Materials DW PAG.doc

Sent from my BlackBerry 10 smartphone on the Verizon Wireless 4G LTE network.

[redacted]

Hi Lisa,

I am also attaching the file compatible with older versions of Word.

Sam

Briefing Ken Kopocis OW-Acting AA
Protective Action Guide (PAG) for Drinking Water
October 28, 2014

Purpose of this briefing:

- Prepare for the Joint OW-OAR AA-level briefing on October 30
- Provide Background Information about PAG Development and SDWA Policy Implications
- Provide basis and rationale that support the recommended Drinking Water PAG

Background on SDWA MCLs for Radionuclides:
In 1976 EPA issued interim regulations for Radionuclides in Drinking Water. In December 2000, EPA promulgated final regulations for four radionuclide groups:

- Gross Alpha (Minus Radon & Uranium) MCL = 15 pCi/L –Retained from 1976 Rule
- Combined Radium 226 & 228, MCL = 5 pCi/L Retained from 1976 Rule
- Gross Beta & Photon, MCL = 4 mrem/yr (Uses Dose Conversion Factors from 1976 Rule)
- Uranium MCL = 30 ug/L, Newly established standard

As a point of reference, for the Gross Beta & Photon, MCL = 4 mrem annual dose:

1. For Iodine-131 in drinking water the derived concentration corresponds to **3 pCi/L**
   - Based on limiting the dose to the thyroid to 4 mrem/yr
   - Assumes 70-year (lifetime) exposure through drinking water
   - Utilizes dose calculation methods developed in 1958 (ICRP 2)

1. Current science (ICRP 72) would calculate the 4 mrem effective dose to the whole body, not a specific organ
   1. **55 pCi/L for Children & 120 pCi/L for Adults for I-131**

What is a Protective Action Guide (PAG)?

- A PAG provides a projected dose value, at which specific protective action is recommended to avoid or reduce the potential radiation exposure that an individual might be exposed to as a result of an accidental or deliberative release of radioactive material.

- A PAG provides guidance designed to assist Federal, State and local governments to avoid acute effects, reduce risk of chromic effects and optimize responses for flexibility and maximum benefit during radiological incidents.

- EPA is responsible for issuing the PAG Manual with the collaboration of an interagency workgroup that includes: DHS, FEMA, DOE, NRC, HHS and others. OAR is EPA's Lead.

- PAGs were initially published in 1992, but the drinking water component was not included citing "*Protective action recommendations for drinking water are under development by EPA*". EPA promised that a drinking water PAG would be developed in a future revision of the PAG document

Drinking Water PAG Development timeline:

	Protective Action Guides in the 1992 Manual	
Phase	**Protective Action**	**Protective Action Guide**
Intermediate (weeks/months to 1 yr)	Relocation of the public	2 rem projected dose first year. Subsequent years, 0.5rem/y projected dose
	Food interdiction	0.5 rem/y projected dose, or 5 rem/y to any individual organ or tissue, whichever is limiting
	Drinking water interdiction	**Promised**

August 2008

1. DHS issued a planning guidance recommending that protective actions for Drinking Water be implemented if levels were projected to exceed 500 mrem for the first year. DHS guidance was specifically developed for Radiological Dispersion Device (RDD) and Improvised Nuclear Device (IND) Incidents.

January 2009

- There was an EPA effort to issue a Drinking Water PAG in early 2009, but the proposal was held-back by the incoming Administration. At the time it was suggested that the Drinking Water PAG would be 500 mrem/yr.
- OW's position on this issue was that protective actions should be based on the SDWA MCL for Radionuclides (4 mrem/yr).

March 2011 Fukushima - Japan

- During the US response to the radiation incident at Fukushima-Japan in March 2011 rain water samples collected as part of RadNet showed concentration of

certain radionuclides above the SDWA Maximum Contaminant Levels (MCL) for Gross and Beta Radiation.

- While the detected levels were very low, for certain radionuclides the MCLs were exceeded. This caused alarm in certain sectors of the media and the general public. EPA had major difficulties conveying its message to the public that the detected levels were not of immediate concern to public health.

- It became evident that EPA was not prepared to promptly respond to a similar incident, and OW was directed to start working on the development a DW PAG.

- Drinking Water Advisory issued by the Japanese Government during Fukushima for Iodine-131 was 100 Becquerel/liter for Infants and 300 Becquerel/liter for Adults (about 2700 pCi/L for Infants & 8000 pCi/L for Adults). ***SDWA MCL for I-131 is 3 pCi/L.

April 2013

Draft PAG Manual – April 2013

EPA Stated:

"EPA is not proposing a specific drinking water PAG at this time. EPA has established enforceable drinking water standards for radionuclides under the Safe Drinking Water Act (SDWA). EPA recommends that, to the extent practicable, emergency measures for drinking water be based on the National Primary Drinking Water Regulations (NPDWR) for Radionuclides. ……

However, in light the Fukushima nuclear power plant accident, in which some Japanese drinking water supplies were impacted, the Agency recognizes a short-term emergency drinking water guide may be useful for public health protection The Agency requests input on the appropriateness of, and possible values for, a drinking water PAG."

OGWDW Approach for Developing a Drinking Water PAG

Options considered during PAG development:

1. Do nothing: States may develop individual PAG levels, or EPA will need to create one after an incident occurs.
2. Use the SDWA MCL (4 mrem) as the level to provide an alternate source of drinking water.
3. Adapt DHS & FDA guidelines: 500 mrem from water for first year after any incident (DHS covers water after a terrorist attack and FDA guide applies to food).
4. Consider dose levels within the range recomendad by international guidelines while providing additional protection for infants and children.

Range of Dose Options Considered:
4 mrem = Dose for current SDWA MCL
100 mrem = Equivalent to Advisory Level issued in Japan assuming 365 day exposure (Infants)
250 mrem = Equivalent to Advisory Level issued in Japan assuming 365 day exposure (Adults)
500 mrem = Dose Value recommended by DHS (for drinking water) & FDA (for Food)
100 mrem to 2,000 mrem = Range of international guidelines for water to keep total doses below 10,000 mrem (IAEA, ICRP)

Note: Even at a low dose level, newer dosimetry and a shorter duration (i.e., one year vs. a lifetime) will result in a PAG concentration orders of magnitude higher than our MCLs for individual nuclides.

Findings from Assessment - Drinking Water PAG:

- OGWDW prepared an assessment with a range of dose values and the resulting projected risks for different targeted sub populations and exposure time frames.

- Projected risks levels vary widely depending on Age, Exposure Time Frame, and Intake Rates. Projected Risks are informed on the most recent and widely accepted dosimetry and dose conversion factors.

Iodine-131
*SDWA Derived MCL Concentration 3 pCi/L

Dose (mrem)	4 mrem	75 mrem	100 mrem	500 mrem
Subpopulation Highest Risk	Infant	Infant	Infant	Infant
Projected Risk	4.67E-06	8.70E-05	1.17E-04	5.84E-04
Concentration (pCi/L)	84	1,580	2110	10,500
Most Restrictive Concentration (pCi/L, 5 yr old)	52	985	1310	6,570
Projected Risk for 5 yr old	4.08E-06	7.65E-05	1.02E-04	5.10E-04
Projected Risk for Adult	8.40E-07	1.57E-05	2.10E-05	1.05E-04

Cesium-137
*SDWA Derived MCL Concentration 200 pCi/L

Dose (mrems)	4 mrem	75 mrem	500 mrem
Subpopulation Highest Risk	Infant	Infant	Infant
Projected Risk	6.45E-06	1.20E-04	8.06E-04
Corresponding Concentration (pCi/L, Infant)	735	13,797	91,900
Projected Risk for Adult	1.81E-06	3.40E-05	2.27E-04

Subpopulation of Concern:
Based on the calculated projections, infants and children 5 years old and younger appear to have the greatest risk from exposure to radionuclides in drinking water.

1. A PAG developed to protect infants and children 5 years and younger would also be at least as protective to fetuses and developing embryos.

Calculated Risk Ranges:
Projected risk for excess cancer cases associated with different exposure scenarios were developed for infants, children and adults. The results from these projections of the estimated excess cases of cancer generally fall within the risks range of 10^{-4} to 10^{-6} for all projected doses evaluated (e.g., 4 mrem to 500 mrem). There are a few exceptions where the risk levels approach the 10^{-3} for dose levels higher than 250 mrem/year.

Recommendation:

- Based on an analysis of radiation risks to all age groups from several nuclides, we

propose a two-tiered PAG as most protective. Children are the most radiosensitive.

- The drinking water PAG during the intermediate phase of a radiological response should be 75 mrem projected dose in the first year for infants, children, and pregnant women and 500 mrem projected dose in the first year for the general population.

The protective action: (Do-Not-Drink)

1. The protective action is to restrict the use of contaminated water for drinking purposes and to provide alternative drinking water for the affected community. Options for providing alternate drinking water could include: bottled water for pregnant women and children, altering the raw water source of a water system, interconnection between systems, or a combination of these.

Rationale:

- All PAGs are based on four principles: 1) Avoid acute effects 2) Reduce chronic effects as much as reasonable 3) Any achievable risk reduction at acceptable cost should be carried out 4) The protection action itself shouldn't introduce more risk than that avoided.
- Risks considered acceptable by EPA from routine operations of individual sources range from 1/1,000,000 persons to 1/10,000 persons with increased risk of cancer. Risks higher than this must be justified on the basis of the emergency nature of a low-probability situation. Up to an order of magnitude higher combined risk from all phases of an incident may be justifiable, when emergency response officials must decide between competing priorities.
- A range of 1/10.000 to 3/10.000 persons with increased cancer risk, depending on the nuclide corresponds to about 500 mrem projected dose to an adult. That same risk to the most sensitive age group corresponds to ~75 mrem projected dose.
- Studies of fate and transport, human exposure scenarios and relative costs and difficulty of providing alternate water by several means were evaluated to set these PAG levels. Differentiating between action levels for the general population versus a sensitive subpopulation may ease some logistical burdens on water system operators.
- This recommended drinking water PAG approach is consistent with PAGs currently in place for other media. PAGs are set by balancing the risks of exposure to radiation against the logistical difficulty, costs and detriments associated with taking protective action to avoid exposure.
- The primary pathway of concern for short term exposure to contaminated water is ingestion (drinking it, not bathing or other uses).
- This proposed drinking water PAG is aligned with PAG recommendations from

DHS and FDA, and it provides additional consideration for pregnant women and young children who are several times more sensitive to radiation exposure (this varies depending on the scenario).

- According to the International Commission on Radiation Protection, emergency levels for protection of people should be selected in the lower part of the 100 to 2,000 mrem/year recommended range. Protection against all exposures, above or below the PAG level, should be balanced against detriments from the protective action itself.
- We determined that it is not appropriate to base emergency protective actions and response measures during short-term radiation incidents on lifetime (70 year) exposure criteria utilized to derive SDWA Maximum Contaminant Levels (MCL).
- We recognize that within the SDWA framework, water systems in violation of drinking water standards have processes available to get back into compliance within a reasonable time frame. While the SDWA framework is useful to inform actions for day-to-day normal operations, it does not provide adequate guidance for emergency responders on what levels of contamination warrant providing alternative water.
- We assume that any drinking water system adversely impacted during a radiation incident will be able to achieve compliance with MCLs within the first year after the incident.
- The government of Japan went through this recently, and adopted a similarly tiered drinking water PAG using international guidance.

Stakeholder reaction:

- In reaction to a previous similar proposal, anti-nuclear and environmental groups publicized misleading comparisons of derived water PAG concentrations alongside MCL concentrations to assert that the SDWA was being weakened. This is likely to happen again.
- In addition, these groups had multiple meetings with then (new) Assistant Administrator Gina McCarthy and Deputy Administrator Bob Perciasepe to voice their concerns about the drinking water PAG development.
- Stakeholders base their strong objections and opposition on the fact that exposure to drinking water with higher levels of radiation will likely result in an increased risk of cancer cases. The stakeholders go into detail pointing out the differences in concentration levels derived from a PAG of 500 mrem in comparison with an MCL of 4 mrem. For some radionuclides, the resulting difference in concentration could be up to several thousand times.
- During Fukushima, the Agency was pressed to develop drinking water guidance for US citizens in Japan and those using cisterns with contamination from the incident. The Agency failed to provide any guidance. Since then, both Bob and Gina have encouraged us to get this done.
- State radiation control programs, nuclear power plant response communities, and the American Water Works Association (AWWA) have asked EPA repeatedly for a

drinking water PAG for emergencies. Comments submitted on our 2013 PAG Manual from many states, the AWWA, Health Physics Society, Nuclear Energy Institute and Conference of Radiation Control Program Directors specifically request a drinking water PAG.

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Environmental Protection Agency
Office of Water
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Christ, Lisa
Sent: Friday, October 24, 2014 12:53 PM
To: Hernandez-Quinones, Samuel
Subject: Re: Materials for Kopocis Pre-Brief

Hi sam
Can you resend but with editing enabled. I can't open the document to send my edits.
Also can you save it as an older word version? Maybe version 7?
Otherwise call me at Ex. 6 - Personal Privacy
Thsnkd
Lisa

Sent from my BlackBerry 10 smartphone on the Verizon Wireless 4G LTE network.

[redacted]

Hi Lisa,

Attached is the briefing document for Kopocis Pre-Brief. It has a lot of information but I think all this is needed to properly bring him up to speed to the PAGs issue.

Let me know if you have any comments.

Thank You

Sam

==========

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202-564-1735

"USEPA Protecting Human Health and the Environment"

To: Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]
Cc: Ellis, Jerry[Ellis.Jerry@epa.gov]
From: Christ, Lisa
Sent: Wed 10/8/2014 1:39:28 PM
Subject: RE: Edits to Briefing Document
SamH Edits 10-7-14 - Joint ODs Briefing_LC.docx

Hi Sam,

Attached are my comments/edits. Let me know if you have any question or concerns. If you're okay with this version, please send it to Lee and Sara for a last review.

Thanks-

Lisa

From: Hernandez-Quinones, Samuel
Sent: Tuesday, October 07, 2014 4:42 PM
To: Christ, Lisa
Subject: Edits to Briefing Document

Hi Lisa,

Here are my edits. I ended up incorporating more edits that I initially though we needed but please let me know what you think about this. I left the pros/cons part out because it ties back to the rationale section and I think is better if we talk about this items during the discussion.

I will send you the other part of the briefing document (DW Basis/Assumptions) as soon as I am done editing them. This one took me longer than expected.

Thank You

Sam

==========

Samuel Hernández Quiñones, P.E.
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Washington, DC 20460
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"USEPA Protecting Human Health and the Environment"

To: Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]
From: Christ, Lisa
Sent: Thur 9/25/2014 7:09:33 PM
Subject: RE: Meeting Purpose Write-up

Hi Sam,

See below…

Thanks-

Lisa

From: Hernandez-Quinones, Samuel
Sent: Thursday, September 25, 2014 2:57 PM
To: Christ, Lisa
Subject: Meeting Purpose Write-up

Hi Lisa,

This is what I was planning to include in the request form. Let me know if you have any edits.

Thanks

Sam

The purpose of the meeting is to provide background information about the development of Radiation Protective Action Guides for Drinking Water and the approach used to prepare recommendations. This meeting is in preparation for a joint decision meeting Mr. Kopocis will have with Janet McCabe, the AA from the Office of Air, on October 30th. ~~We want to make sure Mr. Kopocis is fully aware of how the staff developed the recommendations that will be presented during the Joint AAs Briefing.~~

-

==========

Samuel Hernández Quiñones, P.E.
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202-564-1735

"USEPA Protecting Human Health and the Environment"

To: DeCair, Sara[DeCair.Sara@epa.gov]; Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]; Veal, Lee[Veal.Lee@epa.gov]
From: Christ, Lisa
Sent: Wed 9/24/2014 8:28:20 PM
Subject: RE: For 11 am I will call your office
Sara edits Joint Briefing Edwards-Burneson_LC.docx

Last few edits –

From: DeCair, Sara
Sent: Wednesday, September 24, 2014 4:06 PM
To: Hernandez-Quinones, Samuel; Christ, Lisa; Veal, Lee
Subject: Re: For 11 am I will call your office

Please take a look and see if the yellow highlight is better, or worse, than the second bullet on Rationale. I thought I would take a stab at it!

I propose talking through this briefing myself fairly quickly and linearly, and then ask Sam and Lisa to add key perspectives. Of course questions and discussion will pop up throughout.

I can send the final up to Jon and Alan at 5:30 pm but will wait til then to get your feedback. Thank you!!

Sara

cell Ex. 6 - Personal Privacy

From: Hernandez-Quinones, Samuel
Sent: Wednesday, September 24, 2014 2:40 PM
To: Christ, Lisa; DeCair, Sara; Veal, Lee
Subject: RE: For 11 am I will call your office

Hi,

Attached is the revised file.

Please let me know if you have any comments.

Thank You

Sam

==========

Samuel Hernández Quiñones, P.E.
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"USEPA Protecting Human Health and the Environment"

From: Christ, Lisa
Sent: Wednesday, September 24, 2014 9:16 AM
To: DeCair, Sara; Veal, Lee; Hernandez-Quinones, Samuel; Ellis, Jerry
Subject: RE: For 11 am I will call your office

Sara –

How about if we call you? I have a polycom we can use which will work better than the phone.

Lisa

From: DeCair, Sara
Sent: Wednesday, September 24, 2014 9:05 AM
To: Christ, Lisa; Veal, Lee; Hernandez-Quinones, Samuel; Ellis, Jerry
Subject: For 11 am I will call your office

Lisa,

Thanks for setting this up. If it's just me offsite today, I will call your desk at 564-8354.
We could use my bridge if anyone else is offsite.

Sara

cell Ex. 6 - Personal Privacy

To: Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]
Cc: Ellis, Jerry[Ellis.Jerry@epa.gov]
From: Christ, Lisa
Sent: Fri 4/19/2013 2:11:52 PM
Subject: TPs for Eric on the Rads PAG
080509LetterToEPA.pdf
Grp Ltr to EPA on Rad Issues 8-15-11.pdf

Hi Sam,

Please prepare talking points for Eric on the Rads PAG and send them to me by noon Monday. ORIA scheduled a call on April 23 with Enviro groups who have questions about the draft PAG Manual out for comment. Ex. 6 - Personal Privacy Eric is covering. I'm not sure what groups will be on the call, but you may remember that Bob P. has been approached and met with enviros on this topic before (see attached letters). I would guess concerns similar to those in letters will be raised on the call.

Thanks-

Lisa

~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

Lisa Christ, Associate Chief

Targeting and Analysis Branch

Office of Ground Water and Drinking Water

USEPA

1200 Pennsylvania Ave NW
Washington, DC 20460-0001
phone: 202.564.8354
fax: 202.564-3760

Mail Code: 4607M
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

To: Lopez-Carbo, Maria[Lopez-Carbo.Maria@epa.gov]
Cc: Oshida, Phil[Oshida.Phil@epa.gov]; Burneson, Eric[Burneson.Eric@epa.gov]
From: Christ, Lisa
Sent: Fri 4/5/2013 7:24:44 PM
Subject: RE: PAGs Manual - revised Qs and As

Per ORIA they are not doing any press release around posting the PAG, I'm just anticipating someone may see it and ask questions…

From: Lopez-Carbo, Maria
Sent: Friday, April 05, 2013 3:14 PM
To: Christ, Lisa
Subject: Re: PAGs Manual - revised Qs and As

Thanks Lisa.

From: Christ, Lisa
Sent: Friday, April 05, 2013 3:10:01 PM
To: Lopez-Carbo, Maria
Subject: FW: PAGs Manual - revised Qs and As

Hi Maria,

I've just heard that ORIA is planning to post the draft PAG Manual on the web for public comment today. We are likely to get some questions on the drinking water PAG (or lack of). Attached is an internal Q&A that we have reviewed and okayed. There was only one very small dw edit which OGWDW was fine with. I will prepare a short desk statement that can be used with the Q&A in case it's needed. Let me know what else may be needed.

Lisa

From: Tulis, Dana
Sent: Thursday, April 04, 2013 6:06 PM
To: Dietrich, Debbie; Johnson, Barnes; Flynn, Mike; Grevatt, Peter; Lynch, Mary-Kay; Rudzinski, Suzanne; Schmidt, Lorie; Michaud, John; Devlin, Betsy; Stahle, Susan
Cc: Duncan, Anna; Millett, John; Edwards, Jonathan; Veal, Lee; DeCair, Sara; Christ, Lisa; Elliott, Ross; McMichael, Nate; Woolford, James; Clark, Becki; Dawson, Helen; Walker, Stuart

Subject: RE: PAGs Manual - revised Qs and As

Here are my comments, on top of the rest, we do have some differences we may need to chat on.

From: Dietrich, Debbie
Sent: Thursday, April 04, 2013 5:03 PM
To: Dietrich, Debbie; Johnson, Barnes; Flynn, Mike; Tulis, Dana; Grevatt, Peter; Lynch, Mary-Kay; Rudzinski, Suzanne; Schmidt, Lorie; Michaud, John; Devlin, Betsy; Stahle, Susan
Cc: Duncan, Anna; Millett, John; Edwards, Jonathan; Veal, Lee; DeCair, Sara; Christ, Lisa; Elliott, Ross; McMichael, Nate; Woolford, James; Clark, Becki; Dawson, Helen; Walker, Stuart
Subject: RE: PAGs Manual - revised Qs and As

I seem to be following in Barnes' footsteps – forgot the attachment.

Debbie Dietrich

Assistant Administrator for Homeland Security

USEPA

1200 Pennsylvania Avenue, NW

Washington, DC 20460

Phone: 202-564-6743

FAX: 202-564-0026

HSDN: deborah.dietrich@dhs.sgov.gov

From: Dietrich, Debbie
Sent: Thursday, April 04, 2013 4:52 PM
To: Johnson, Barnes; Flynn, Mike; Tulis, Dana; Grevatt, Peter; Lynch, Mary-Kay; Rudzinski, Suzanne; Schmidt, Lorie; Michaud, John; Devlin, Betsy; Stahle, Susan
Cc: Duncan, Anna; Millett, John; Edwards, Jonathan; Veal, Lee; DeCair, Sara; Christ, Lisa; Elliott, Ross; McMichael, Nate; Woolford, James; Clark, Becki; Dawson, Helen; Walker, Stuart
Subject: RE: PAGs Manual - revised Qs and As

Mike, I added my comments (purple) to Barnes'. Let me know if you have any questions.

Debbie Dietrich

Assistant Administrator for Homeland Security

USEPA

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Washington, DC 20460

Phone: 202-564-6743

FAX: 202-564-0026

HSDN: deborah.dietrich@dhs.sgov.gov

From: Johnson, Barnes
Sent: Thursday, April 04, 2013 2:50 PM
To: Johnson, Barnes; Flynn, Mike; Dietrich, Debbie; Tulis, Dana; Grevatt, Peter; Lynch, Mary-Kay; Rudzinski, Suzanne; Schmidt, Lorie; Michaud, John; Devlin, Betsy; Stahle, Susan
Cc: Duncan, Anna; Millett, John; Edwards, Jonathan; Veal, Lee; DeCair, Sara; Christ, Lisa; Elliott, Ross; McMichael, Nate; Woolford, James; Clark, Becki; Dawson, Helen; Walker, Stuart
Subject: RE: PAGs Manual - revised Qs and As

Forgot the attachment

Barnes Johnson

USEPA | Superfund | Tel 703-347-8758 | johnson.barnes@epa.gov

From: Johnson, Barnes
Sent: Thursday, April 04, 2013 2:49 PM
To: Flynn, Mike; Dietrich, Debbie; Tulis, Dana; Grevatt, Peter; Lynch, Mary-Kay; Rudzinski, Suzanne; Schmidt, Lorie; Michaud, John; Devlin, Betsy; Stahle, Susan

Cc: Duncan, Anna; Millett, John; Edwards, Jonathan; Veal, Lee; DeCair, Sara; Christ, Lisa; Elliott, Ross; McMichael, Nate; Woolford, James; Clark, Becki; Dawson, Helen; Walker, Stuart
Subject: RE: PAGs Manual - revised Qs and As

Mike/Jon,

I had just a couple of suggestions. Also Peter – check out my one comment in the drinking water area – it didn't sound quite right to me and I proposed a very small edit. Otherwise this looks fine to me.

Barnes Johnson

USEPA | Superfund | Tel 703-347-8758 | johnson.barnes@epa.gov

From: Flynn, Mike
Sent: Thursday, April 04, 2013 12:05 PM
To: Dietrich, Debbie; Tulis, Dana; Johnson, Barnes; Grevatt, Peter; Lynch, Mary-Kay; Rudzinski, Suzanne; Schmidt, Lorie; Michaud, John; Devlin, Betsy; Stahle, Susan
Cc: Duncan, Anna; Millett, John; Edwards, Jonathan; Veal, Lee; DeCair, Sara; Christ, Lisa; Elliott, Ross; McMichael, Nate
Subject: PAGs Manual - revised Qs and As

All,

As a follow-up to our call yesterday, attached are revised Qs and As on the revised PAGs Manual. We've refined some of the answers, and you will note that we've added "key points" after the answers on a few of the questions to highlight the key points in the answer. Please review and let us know if you have any final comments by COB today. FYI the PAGs package was signed by Gina M a bit earlier today and it's on the way to the Administrator's office. We understand that the package may be signed later today.

FYI OAR's communications folks have been working tor refine the press materials (desk statement, etc), coordinating with your coms folks. We will send around materials when they are complete so you have them.

Call or email if you have questions.

thanks again for continuing help, Mike

From: Flynn, Mike
Sent: Wednesday, April 03, 2013 6:04 PM
To: Flynn, Mike
Subject: FW: PAG Manual - for tomorrow's conf call

Dietrich, Debbie; Tulis, Dana; Johnson, Barnes; Grevatt, Peter; Lynch, Mary-Kay; Rudzinski, Suzanne; Schmidt, Lorie; Michaud, John; Devlin, Betsy; Stahle, Susan

Duncan, Anna; Millett, John; Edwards, Jonathan; Veal, Lee; DeCair, Sara; McMichael, Nate

Mike Flynn, Director

Office of Radiation & Indoor Air

U.S. EPA

202-343-9356

From: Flynn, Mike
Sent: Tuesday, April 02, 2013 7:16 PM
To: Dietrich, Debbie; Tulis, Dana; Johnson, Barnes; Grevatt, Peter; Lynch, Mary-Kay; Rudzinski, Suzanne; Schmidt, Lorie; Michaud, John; Devlin, Betsy; Stahle, Susan
Cc: Duncan, Anna; Millett, John; Edwards, Jonathan; Veal, Lee; DeCair, Sara; McMichael, Nate
Subject: PAG Manual - for tomorrow's conf call

All,

We have a call scheduled tomorrow (Wed) at 2pm to provide you the latest on the PAG Manual and to discuss communications. Attached for our discussion is a preliminary draft of Q's and A's that we need your help on refining (and adding to). Our goal is to make sure we're all are 'on the same page' in responding to questions when the manual is released.

Some of you had conflicts and cannot make our call tomorrow – we will follow-up separately with you.

Thanks, Mike

Mike Flynn, Director

Office of Radiation & Indoor Air

U.S. EPA

202-343-9356

To: Lopez-Carbo, Maria[Lopez-Carbo.Maria@epa.gov]
Cc: Burneson, Eric[Burneson.Eric@epa.gov]; Oshida, Phil[Oshida.Phil@epa.gov]
From: Christ, Lisa
Sent: Fri 4/5/2013 9:04:45 PM
Subject: Fw: PAG Manual is out!!
PAGFactSheet4-5-2013-FINAL.pdf

Fyi. Attached FS may be helpful for general questions
Lisa

From: DeCair, Sara
Sent: Friday, April 05, 2013 5:01:00 PM
To: Andrew.Wallo@eh.doe.gov; Ansari, Armin (CDC/CCEHIP/NCEH); Carlos.Corredor@Hq.Doe.Gov; Christ, Lisa; Darrell Liles; Dawson, Helen; Edward.Regnier@hq.doe.gov; Ferris.John@dol.gov; Hernandez-Quinones, Samuel; Hudson, Scott; Jensen, JohnT; john.mackinney@dhs.gov; kzirbel@endyna.com; lodwick.jeffrey@dol.gov; Major James Ross; Manuel.Aponte@osd.mil; Miller, Charles W. (CDC/CCEHIP/NCEH); Noska, Mike (FDA); Patricia.Milligan@nrc.gov; Quinn, Vanessa; ricardo.a.reyes@us.army.mil; Schumann, Jean; siddhanti@endyna.com; Terry Kraus; Veal, Lee; Walker, Stuart; william.cunningham@nist.gov
Cc: Veal, Lee
Subject: PAG Manual is out!!

PAGs Subcommittee,

EPA has just released the "Protective Action Guides and Planning Guidance for Radiological Incidents" (PAG Manual). The proposal will be published officially in the Federal Register in the coming week or so, and we've put a copy on our website if you'd like to see it sooner. (http://www.epa.gov/radiation/rert/pags.html)

Attached is a fact sheet that might be useful for you and your colleagues. We will be taking comment on the guide for 90 days from the date of publication in the Federal Register, so please plan to roll up your sleeves and get busy adjudicating those later this summer.

Thank you!

Sara

Sara D. DeCair, Health Physicist

EPA's Center for Radiological Emergency Management

202-343-9108

To: DeCair, Sara[DeCair.Sara@epa.gov]; Ellis, Jerry[Ellis.Jerry@epa.gov]; Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]
Cc: Veal, Lee[Veal.Lee@epa.gov]
From: Christ, Lisa
Sent: Fri 1/10/2014 9:07:56 PM
Subject: RE: briefing scheduling

Hi Sara,

That is probably a little faster that I expected. A couple weeks later would be better.

Thanks-

Lisa

From: DeCair, Sara
Sent: Friday, January 10, 2014 11:51 AM
To: Christ, Lisa; Ellis, Jerry; Hernandez-Quinones, Samuel
Cc: Veal, Lee
Subject: briefing scheduling

Lisa –

We are working on the scheduling and have tentatively chosen Feb. 6th for the ODs briefing and a pre-brief for Jon, our DD, for Jan. 21. That would require a draft briefing to be in hand on Jan. 17th, which is really soon! I wanted to check if that was a little too fast for you to get a draft together, even knowing it doesn't have to be final since DDs will also want to help shape it as well.

Thanks for letting me know what you think so we can look a little further out in to February if needed. Cheers,

S.

From: Christ, Lisa
Sent: Wednesday, January 08, 2014 5:22 PM
To: Ellis, Jerry; DeCair, Sara; Hernandez-Quinones, Samuel
Subject: RE: A few more nuclides to consider, and briefing scheduling

Hi Sara,

Sounds like y'all had a productive meeting last month. I think it would be great to update Petter and Mike on the progress made and thinking so far. About a month from now should allow time to pre-brief the acting Division Director in OGWDW. Peter's scheduler is Paula Mason – she'd best able to assist with scheduling. I suggest we prepare briefing materials together. We can prepare a 1st draft and sent it to y'all for input.

Thanks-

Lisa

From: Ellis, Jerry
Sent: Wednesday, January 08, 2014 5:12 PM
To: DeCair, Sara; Hernandez-Quinones, Samuel
Cc: Christ, Lisa
Subject: RE: A few more nuclides to consider, and briefing scheduling

Thank you Sara,

We will get back to you. Just copied Lisa.

Jerry L. Ellis, Jr.

Physical Scientist

Standards and Risk Management Division

Office of Ground Water and Drinking Water

U.S. Environmental Protection Agency

1200 Pennsylvania Ave. (4607M), N.W.

Washington, D.C. 20460

Phone: 202-564-2766

From: DeCair, Sara
Sent: Wednesday, January 08, 2014 3:57 PM
To: Hernandez-Quinones, Samuel
Cc: Ellis, Jerry
Subject: A few more nuclides to consider, and briefing scheduling

Happy New Year Sam, Jerry,

I'm finally following up on our water discussion recently!

You asked if other nuclides would be of interest, and I'm attaching a highly sensitive, internal use only chart that Lowell created back when we were reacting to accusations that our pre-proposal water PAG would be really horrible. You'll see a couple nuclides that have a slightly higher risk for a DRL linked to 500 mrem. Use that however you like, but of course don't share the chart electronically if you can avoid it. Thanks for that!

We talked about potentially briefing our ODs on the thinking so far, so that the work doesn't get too far before we have a good feeling from leadership. Can I start that scheduling process with Ginny, Mike Flynn's scheduler, and use you as OW's points of contact in addition to your OD's scheduler? If you say that's good, then I'll confirm with Lee and Jon and get the ball rolling for briefing time about a month from now.

Thanks for letting me know what you think, and I'll review this draft report now,

Sara

Sara D. DeCair

http://www.epa.gov/radiation/rert/pags.html

202-343-9108

To: Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]
From: Christ, Lisa
Sent: Thur 1/23/2014 8:37:48 PM
Subject: RE: Is 1/24 okay for draft Water brief mat'ls?
Grevatt Briefing PAGs Feb 2014_lc.docx

Hi Sam,

Attached are my comments. I mostly moved things around to put it into Peter's preferred briefing format. We'll need to get input from ORIA on the briefing paper before its final. Please send this to Sara et al for their comments.

Thanks-

Lisa

From: Hernandez-Quinones, Samuel
Sent: Thursday, January 23, 2014 1:36 PM
To: Christ, Lisa; Ellis, Jerry
Subject: RE: Is 1/24 okay for draft Water brief mat'ls?

Hi Lisa,

Please see attached file.

Let me know if you would like me to add anything else.

Sam

From: Christ, Lisa
Sent: Thursday, January 16, 2014 12:05 PM
To: Hernandez-Quinones, Samuel; Ellis, Jerry
Subject: FW: Is 1/24 okay for draft Water brief mat'ls?

Sam & Jerry –

Please let me know you can prepare briefing materials for an update on the development of options for a Rads PAG by COB January 21? That would allow me time to review and time to schedule a briefing with Eric late January. If you need more time let me know so I can advise Sara.

Thanks-

Lisa

From: DeCair, Sara
Sent: Thursday, January 16, 2014 12:01 PM
To: Christ, Lisa
Subject: Is 1/24 okay for draft Water brief mat'ls?

So we can pre-brief Jon on 1/28? Thanks for letting me know!

S.

Sara D. DeCair

http://www.epa.gov/radiation/rert/pags.html

202-343-9108

To: Perry, Sam A (DOH)[Sam.Perry@DOH.WA.GOV]
Cc: Means, Mike J (DOH)[mike.means@DOH.WA.GOV]; Clifford, Denise (DOH)[Denise.Clifford@DOH.WA.GOV]; Burneson, Eric[Burneson.Eric@epa.gov]; Grubbs, Thomas[Grubbs.Thomas@epa.gov]
From: Christ, Lisa
Sent: Tue 8/6/2013 7:22:22 PM
Subject: RE: Radionuclide exposure in drinking water - Short-term HALs/PAGs (Draft EPA Guidance)

Hi Sam,

OGWDW was involved in the development of the draft PAG Manual and we'll be working with EPA's Office of Radiation and Indoor Air to address drinking water related comments submitted to the docket.. You can cc me Christ.lisa@epa.gov and Hernandez-Quinones.Samuel@epa.gov when you send your comments.

Thank you-

Lisa

~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

Lisa Christ, Associate Chief

Targeting and Analysis Branch

Office of Ground Water and Drinking Water

USEPA

1200 Pennsylvania Ave NW
Washington, DC 20460-0001
phone: 202.564.8354
fax: 202.564-3760

Mail Code: 4607M

From: Grubbs, Thomas
Sent: Tuesday, August 06, 2013 2:54 PM
To: Perry, Sam A (DOH); Burneson, Eric; Christ, Lisa
Cc: Means, Mike J (DOH); Clifford, Denise (DOH)
Subject: RE: Radionuclide exposure in drinking water - Short-term HALs/PAGs (Draft EPA Guidance)
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

Sam – I am not the right person. Eric is acting division director, so I am copying Lisa Christ, who is the acting branch chief for the branch that does radionuclide issues.

Lisa – Thanks for any help you can give Sam.

Tom

From: Perry, Sam A (DOH) [mailto:Sam.Perry@DOH.WA.GOV]
Sent: Tuesday, August 06, 2013 2:42 PM
To: Grubbs, Thomas; Burneson, Eric
Cc: Means, Mike J (DOH); Clifford, Denise (DOH)
Subject: Radionuclide exposure in drinking water - Short-term HALs/PAGs (Draft EPA Guidance)

Hi Tom and Eric,

I am working with colleagues in the WSDOH Office of Radiation Protection on putting together comments on a the draft PAG Manual - Protective Action Guides and Planning Guidance for Radiological Incidents. See http://www.epa.gov/radiation/docs/er/pag-manual-interim-public-comment-4-2-2013.pdf

In the manual, there is discussion of drinking water (See Section 3.5 if you're interested).

To help facilitate coordination between EPA programs on this issue, I suggested that our Rad folks copy staff in EPA-OGWDW. Who you think it would be best to copy when in our comments on the development of short-term health advisory levels/PAGs for radionuclides? You? Phil Oshida? Ann Codrington?

I'd appreciate any direction that you can provide.

Thanks,

Sam

Samuel A. L. Perry, P.E.
Water Treatment Engineer
Office of Drinking Water
WSDOH - Environmental Public Health Division
20425 - 72nd Ave. S., Suite 310/Kent, WA 98032
DIRECT: (253) 395-6755
FAX: (253) 395-6760
e-mail: sam.perry@doh.wa.gov
Public Health - **Always Working for a Safer and Healthier Washington**

***** This message may be confidential. If you received it by mistake, please notify the sender and delete the message. *****

To: Oshida, Phil[Oshida.Phil@epa.gov]
Cc: Schuck, Tracey[Schuck.Tracey@epa.gov]
From: Christ, Lisa
Sent: Wed 6/19/2013 6:41:55 PM
Subject: TAB input for SRMD bi-weekly

Draft Radiation Protective Action Guidelines Webinar – On June 20, ORIA is hosting the first in a series of webinars geared toward emergency management professionals who use Protective Action Guides for radiological emergency preparedness plans and who are looking for a short overview. A multi-agency team will run through key changes in the 2013 PAG Manual proposal, out for public review and comment now. Specific Federal Register questions to inform comments will be highlighted with time allotted for questions and answer. (Sam Hernandez 564-1735).

Reduction of Lead in Drinking Water Act: FAQs – The public comment period for the draft FAQs ends June 21, 2013 – several requesters have asked for a 30 day extension of the comment period. SRMD posted draft Lead FAQs for public comment on the agency website on May 22. The purpose of the FAQs is to provide answers to Safe Drinking Water Act questions raised by stakeholders. (Jeff Kempic 564-4880).

To: Oshida, Phil[Oshida.Phil@epa.gov]
From: Christ, Lisa
Sent: Thur 7/11/2013 6:12:11 PM
Subject: OW bullets

Two short ones--

CCL4 – The CCL4 work group is reviewing the draft FRN for the proposed list. No major issues have been identified and we anticipate all offices will "concur". This is a tier 3 action so no formal FAR will take place. (Meredith Russell 564-0814)

Draft Protective Action Guides And Planning Guidance For Radiological Incidents – The public comment period has been extended for 60 days, until September 16, 2013. (Sam Hernandez 564-1735))

~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

Lisa Christ, Associate Chief

Targeting and Analysis Branch

Office of Ground Water and Drinking Water

USEPA

1200 Pennsylvania Ave NW
Washington, DC 20460-0001
phone: 202.564.8354
fax: 202.564-3760

Mail Code: 4607M
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

To: Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]; Ellis, Jerry[Ellis.Jerry@epa.gov]
From: Christ, Lisa
Sent: Wed 9/18/2013 5:34:34 PM
Subject: FW: The Morning Headlines from InsideEPA.com -- September 18, 2013

From: Grevatt, Peter
Sent: Wednesday, September 18, 2013 7:50 AM
To: Burneson, Eric; Christ, Lisa; Oshida, Phil; Lopez-Carbo, Maria; Codrington, Ann; Travers, David; Newberry, Debbie; Corr, Elizabeth
Subject: FW: The Morning Headlines from InsideEPA.com -- September 18, 2013

From today's inside EPA on PAGS.

Daily News

States, Scientists Urge Drinking Water Standard For EPA Radiological Guide

Posted: September 17, 2013

Some states and radiation scientists are calling on EPA to develop a protective drinking water level for exposures to radiation in the intermediate aftermath following radiological emergencies, noting that the 2011 Fukushima nuclear power plant accident showed that applying the existing radionuclides drinking water regulations to accident conditions failed to be feasible.

At the same time, environmentalists say EPA should drop all efforts to establish a drinking water protective level that is weaker than Safe Drinking Water Act (SDWA) limits, but instead should give local and state authorities clear guidance on how to ensure the safety of water supplies during such periods. Environmentalists want EPA to withdraw the guidance, which they say weakens public health protections.

And drinking water utilities are questioning many of EPA's assumptions about their ability to provide clean water supplies after an incident, calling them naïve and asking to meet with the agency about the issue.

The comments respond to an EPA request for public input into the possibility of developing a drinking water standard for intermediate time periods following emergency radiological releases as part of its draft "Protective Action Guides and Planning Guidance for Radiological Incidents," known as the PAG for radiological incidents. EPA is calling this a "short-term" emergency drinking water PAG.

EPA did not include such a standard in the draft, but asked for comment on the matter, and alludes in footnotes to several approaches by other entities that environmentalists say would be far less stringent than what SDWA permits.

EPA took comment until Sept. 16 on its draft interim PAG, which the agency released April 15. Upon the document's

release, environmentalists and anti-nuclear groups started raising concerns, charging dramatically weaker standards are being promoted for cleanup and drinking water limits. The document is meant to guide first responders at the scene of radiological emergencies, bringing together relevant government guidance and protocols on what steps should be taken, according to a *Federal Register* notice on the guidance.

Enforceable SDWA standards for radionuclides exist, but the agency says in the draft guide that it is not currently proposing a specific drinking water PAG. Rather, the agency advises that to the extent practicable, emergency measures for drinking water should be based on the National Primary Drinking Water Regulations (NPDWR) for Radionuclides, which give states flexibility when responding to radiological events.

Regulatory Standard

If a public water system exceeds the NPDWR, it must work to return to compliance as soon as feasible, EPA says. The NPDWR provides for a regulatory standard of 4 millirems (mrem)/year based on lifetime exposure, but EPA says it is asking for input on an approach and technical rationale for a drinking water PAG for an emergency's intermediate phase -- generally considered from one year to seven years after the emergency -- to help officials determine protective actions under emergency conditions when exposures occur over shorter time periods than those expected in the NPDWR. In footnotes, EPA makes reference to a range of emergency guidelines on drinking water that international organizations have produced.

"[T]he Agency recognizes a short-term emergency drinking water guide may be useful for public health protection in light of the Fukushima nuclear power plant accident, which impacted some Japanese drinking water supplies."

In response, the Pennsylvania Department of Environmental Protection says in July 10 comments that the Fukushima accident demonstrated that relying on the NPDWR levels for accident conditions "is not feasible," and a drinking water PAG is needed. "It is of great concern that, after 21 years since the issuance of the 1992 PAG Manual, the EPA still has not issued PAGs for drinking water for accident/emergency situations and is only now soliciting input to aid it in the development of drinking water PAGs."

And the Ohio Department of Public Safety says in June 24 comments that while SDWA and NPDWR standards may work for lifetime exposure calculations, "they aren't easily adaptable to emergency situations." The Fukushima accident showed that areas in a radiological emergency may not have access to outside sources of water and supplies. "In order to cover all contingencies it would be prudent to have a drinking water PAG developed so we can advise people who only have contaminated drinking water available," the state says.

The Health Physics Society, which represents scientists and others promoting the control of potential risks from radiation relative to benefits, generally calls the PAG "thorough and clear," but says a short-term drinking water standard is needed, stressing that the Fukushima accident "highlighted the importance of having specific, practical guidelines for drinking water in short-term radiation emergency situations."

Water Values

But in draft comments floated ahead of the Sept. 16 deadline from the Committee to Bridge the Gap and other environmental groups, the commenters say the footnotes EPA references regarding other entities' emergency guidelines would allow for a variety of drinking water values that would weaken the protections in the SDWA to different degrees. The groups analyzed these for various radionuclides to make comparisons on these values in contrast to EPA's SDWA maximum contaminant level for the substance. It found levels up to tens of thousands of times beyond SDWA levels, according to the draft comments. "Rather than proposing to force people to drink water contaminated at levels hundreds, thousands, or even tens of thousands of times higher than the EPA has historically considered acceptable under the [SDWA], the PAGs should instead do what they are supposed to do: provide protective action guidance for authorities on how to treat contaminated water or provide alternative drinking water supplies after the immediate emergency has passed," they say. For instance, the various alternatives in the guidance would allow for between 34 and 828 times the level of Strontium-90 allowed under existing SDWA levels, they say.

The draft comments recommend EPA halt efforts to set water PAGs weaker than SDWA limits, the commenters say.

And the Natural Resources Defense Council (NRDC) in July 15 comments rejects the idea of setting a new drinking water PAG. "Given that bottled water is widely available commercially throughout the country, NRDC sees no

necessity in relaxing the established enforceable drinking water standards for radionuclides under the [SDWA], limiting exposures from drinking water to 4 mrem per year."

The American Water Works Association (AWWA), which represents drinking water utilities, in its comments recommends EPA set PAGs for drinking water during the intermediate period that are consistent with PAGs for food interdiction.

AWWA also takes issue with other aspects of the guide as they relate to water systems. The group questions EPA's statement that the public should be told the water is safe to drink during the early phase of an incident because of the time it would take for the radionuclides to move into a supply system, and the assumption that all water distribution systems have reserve and storage capacity. "We question the assumption that the Agency is making in regards to distribution system reserve/storage capacity as we believe they are naïve," AWWA says. Storage capacity varies, and is influenced by the time of day and year, it notes. EPA should consider worst reasonable case scenarios where storage is minimal and treatment plants are running at full capacity. Under these conditions, treatment plants should be advised to shut down immediately to mitigate potential contamination of the system, it says.

The group also questions EPA's recommendation to set up pipelines from "clean" water supplies to distribution centers in order to supply water to an affected area. The option assumes a clean supply of water exists, "which runs counter to EPA's own analysis as performed by the Environmental Assessment Division of Argonne National Laboratory," the comments say. Resources to set up a pipeline may also not be available under emergency conditions, it notes.

AWWA also suggests meeting with EPA to examine the emergency water supply issue.

States' Concerns

Two states -- California and Pennsylvania -- are raising concerns over EPA's decision to remove tables it had included in its earlier 1992 PAG. "The exclusion of Dose Conversion Factors (DCF), Derived Response Levels (DRL) and calculation methodologies makes this document more of a discussion of good ideas rather that [sic] a technical standard and reference document," the California Governor's Office of Emergency Services says in its comments.

Pennsylvania DEP says these tables and conversions from deposition to dose rate should be included in the manual. Removal of the tables will cause "uncertainty and ambiguity" as to the best values to use and create delays during emergencies, it says. "State and Local governments need a readily accessible, authoritative source of this information included with the PAG guidance. Our plans and procedures need to state explicitly what DCFs, DRLs, and conversions from deposition to dose rate will be used in accident/emergency conditions to evaluate the situation."

The state also says EPA should "develop a realistic strategy" to address radioactive waste management in light of large radiological releases, rather than relying on states and local officials, as they will not have the resources to address such a substantial waste issue.

The Committee to Bridge the Gap's draft comments and the NRDC comments cite major problems with the draft PAG, in addition to these issues, building on initial remarks environmentalists made over the draft guide's alleged weakening of standards and concerns over a controversial cleanup approach called optimization. They say the agency should withdraw the guidance.

In addition to the concerns over drinking water levels, the Committee to Bridge the Gap's draft comments say the group's main concerns are over language that suggests applying long-term cleanup standards much less stringent than EPA's traditional risk range; the removal of relocation PAGs for high thyroid and skin doses; the suggestion that radioactive waste be allowed for disposal at solid waste municipal facilities; the expansion of the PAG to effectively cover all radioactive releases, including transportation accidents; the use of dose limits as high or higher than those used decades ago despite newer estimates that cancer risks are greater than previously believed; and the apparent retention of outdated and extremely high Food & Drug Administration food contamination levels, the draft comments say.

From: InsideEPA.com [mailto:epa-alerts@iwpnews.com]
Sent: Wednesday, September 18, 2013 6:36 AM
To: Grevatt, Peter
Subject: The Morning Headlines from InsideEPA.com -- September 18, 2013

To ensure you receive our emails, please add epa-alerts@iwpnews.com to your address book.

September 18, 2013

Latest News

ECOS Punts Utility NSPS 'Principles' Resolution Due To States' Divisions

The Environmental Council of the States (ECOS) has punted for a month a final vote on a resolution outlining states' "principles" for EPA's pending greenhouse gas (GHG) rule for existing utilities, after some states opposed to GHG rules warned that the draft resolution could be seen as an endorsement of existing state climate trading programs.

READ MORE >>

Agencies Float CWA Jurisdiction Plan But Drop Plan For Interim Guide

EPA and the Army Corps of Engineers have submitted to the White House for interagency review a long-awaited draft proposed rule clarifying the reach of the Clean Water Act (CWA) over marginal waters but have dropped plans for issuing interim guidance on the issue prior to the rule's release.

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Utility Luminant Generation is reiterating its call for the Supreme Court to review an appellate ruling that upheld EPA's policy barring the state from granting . . .

EDF Methane Study Spurs Debate On Air Rules

Of Water Act's Reach

The Army Corps of Engineers is considering developing a uniform methodology for EPA and other regulators to use in determining the ordinary high water mark (OHWM), a legal concept used to measure the lateral limits of Clean Water Act (CWA) jurisdiction for non-tidal waterbodies.

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Biofuels Groups Claim 'Huge' Corn Crop Weakens Calls For RFS Repeal

Biofuels advocates say an anticipated "huge" corn crop this year will reverse low production caused by last year's drought and undermine calls to repeal EPA's renewable fuel standard (RFS) over the claim that the program is driving up corn shortages and prices, though they doubt the crop growth will alter the looming RFS mandates for 2014.

READ MORE >>

States, Scientists Urge Drinking Water Standard For EPA Radiological Guide

Some states and radiation scientists are calling on EPA to develop a protective drinking water level for exposures to radiation in the intermediate aftermath following radiological emergencies, noting that the 2011 Fukushima nuclear power plant accident showed that applying the existing radionuclides drinking water regulations to accident conditions failed to be feasible.

READ MORE >>

EPA Extends Review Of Maine Ozone Control Opt-Out After States' Doubts

EPA is extending by one month -- from Sept. 4 to Oct. 3 -- the comment period on its proposed approval of Maine's plan for a partial exemption of its emission reduction mandates as part of the Ozone Transport Commission (OTC), after other states raised doubts over whether the plan is legal and would satisfy Clean Air Act requirements.

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To: Veal, Lee[Veal.Lee@epa.gov]; DeCair, Sara[DeCair.Sara@epa.gov]
Cc: Ellis, Jerry[Ellis.Jerry@epa.gov]; Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]
From: Christ, Lisa
Sent: Thur 6/26/2014 1:58:54 PM
Subject: RE: draft scheduler request for AAs on PAGs

Hi All –

Yes this looks reasonable.

Lisa

From: Veal, Lee
Sent: Thursday, June 26, 2014 9:13 AM
To: DeCair, Sara; Christ, Lisa
Cc: Ellis, Jerry; Hernandez-Quinones, Samuel
Subject: RE: draft scheduler request for AAs on PAGs

Sara,

This looks good to me. We'll have our move completed before the DD meeting, which is helpful.

Lisa,

How are schedules on the OGWDW end? Is this a reasonable approach to you?

Lee

Lee Ann B. Veal

Director, Center for Radiological Emergency Management

Radiation Protection Division, ORIA, OAR

Office: 202-343-9448

Cell: 202-617-4322

www.epa.gov/radiation

From: DeCair, Sara
Sent: Thursday, June 26, 2014 8:59 AM
To: Veal, Lee; Christ, Lisa
Cc: Ellis, Jerry; Hernandez-Quinones, Samuel
Subject: draft scheduler request for AAs on PAGs

Lee, Lisa, how does this look? I can queue it up through Jon's scheduler, Connie, to coordinate with Mason from the DDs level.

Meeting request for Janet McCabe and Nancy Stoner, AAs of Air and Water, respectively: "Protective actions for drinking water in a radiological incident."

•□□□□□□□□ One hour, in mid or late August 2014. Briefing materials will be provided in advance.

•□□□□□□□□ Key participants:

- Mike Flynn, Peter Grevatt, Jon Edwards, Alan Perrin, Eric Burneson, Lee Veal, Lisa Christ, Sam Hernandez-Quinones, Sara DeCair

•□□□□□□□□ Additional invitees:

- Jerry Ellis, Mike Boyd

•□□□□□□□□ Pre-briefs requested beforehand:

- Office Directors Mike Flynn and Peter Grevatt, by the first week of August

- Division Directors Jon Edwards and Eric Burneson, by the end of July

Thanks!

S.

Sara D. DeCair

http://www.epa.gov/radiation/rert/pags.html

202-343-9108

To: DeCair, Sara[DeCair.Sara@epa.gov]; Veal, Lee[Veal.Lee@epa.gov]
Cc: Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]; Ellis, Jerry[Ellis.Jerry@epa.gov]
From: Christ, Lisa
Sent: Wed 9/3/2014 9:00:01 PM
Subject: RE: quick review? Briefing request for Water, Air AAs

Hi Sara –

This likes fine. Ken is actually the Deputy AA (since he hasn't been confirmed) for now. The proposed dates look good.

Thanks-

Lisa

From: DeCair, Sara
Sent: Wednesday, September 03, 2014 4:36 PM
To: Christ, Lisa; Veal, Lee
Cc: Hernandez-Quinones, Samuel; Ellis, Jerry
Subject: quick review? Briefing request for Water, Air AAs

Connie,

This is a recycled scheduling request agreed to by OW and us, for getting to our AAs by the end of October. We had to cancel the prior set of briefings but much of the information is similar. Can you coordinate with Paula Mason from the DDs level to start this process?

Meeting request for Janet McCabe and Ken Kopocis, AAs of Air and DAA of Water, respectively: "Protective actions for drinking water in a radiological incident."

One hour, before Oct. 17, 2014 if at all possible. Briefing materials will be provided in advance.

Key participants:

- Mike Flynn, Peter Grevatt, Jon Edwards, Alan Perrin, Eric Burneson, Lee Veal, Lisa Christ, Sam Hernandez-Quinones, Sara DeCair

Additional invitees:

- Jerry Ellis, Mike Boyd

Pre-briefs requested beforehand:

Office Directors Mike Flynn and Peter Grevatt before Oct. 3, 2014 if possible.

Division Directors Jon Edwards and Eric Burneson before Sept. 19 if possible.

Thank you so much! Please let me know if you need further details or if I can lend a hand in any way.

Sara D. DeCair

http://www.epa.gov/radiation/rert/pags.html

202-343-9108

new office

Room 1416 B in WJC West

1200 Pennsylvania Ave., NW

Washington, D.C.

To: Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]
Cc: Ellis, Jerry[Ellis.Jerry@epa.gov]
From: Christ, Lisa
Sent: Wed 8/27/2014 8:16:02 PM
Subject: RE: a couple things
Draft Water PAG FRN language.docx

Hi Sam,

Based on our discussion yesterday, I moved some sections and edited others. I also added headers to help guide the reader. Please merge my revisions with your revisions into one document.

Let's meet next week to discuss the revised draft.

Thanks-

Lisa

From: Hernandez-Quinones, Samuel
Sent: Monday, August 25, 2014 5:46 PM
To: Christ, Lisa
Subject: RE: a couple things

Lisa this is the language provided by the Office of Air.

Sam

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Environmental Protection Agency
Office of Water
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Christ, Lisa
Sent: Monday, August 25, 2014 11:10 AM
To: Hernandez-Quinones, Samuel
Subject: a couple things

Hi Sam,

I received a voicemail from Lee today asking to touch base on the Rads PAG stuff, so I scheduled a meeting for tomorrow. Please send me the latest language from ORIA.

Also, FY14 funds must be obligated by the end of the month. Please submit a WA amendment to Ron this week for the Cadmus Rads PAG WA. The amendment should be for a total of $44,000 ($6,000 roll and $38,000 FY14$)

Let me know if you have any questions or concerns –

Lisa

~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

Lisa Christ, Chief

Targeting and Analysis Branch

Office of Ground Water and Drinking Water

USEPA

1200 Pennsylvania Ave NW
Washington, DC 20460-0001
phone: 202.564.8354
fax: 202.564-3760

Mail Code: 4607M
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

To: Ex. 6 - Personal Privacy
From: Christ, Lisa
Sent: Mon 3/17/2014 4:47:29 PM
Subject: Fw: Some edits to H2O briefing; due Monday
Grevatt-Flynn Briefing PAGs sara markup 3-14-2014.docx

Sent from my BlackBerry 10 smartphone on the Verizon Wireless 4G LTE network.

[redacted]

Sorry, I just noticed a missing "of" in the text box on page 1. This version is corrected. Thanks!

From: DeCair, Sara
Sent: Friday, March 14, 2014 5:11 PM
To: Hernandez-Quinones, Samuel; Christ, Lisa; Ellis, Jerry
Cc: Perrin, Alan; Veal, Lee; Edwards, Jonathan
Subject: Some edits to H2O briefing; due Monday

Sam,

I made several cosmetic changes in the attached version (you can see the redline if you switch to Final Showing Markup in Word) and decoupled the Precautionary Actions from the risk numbers so that each risk level/concentration doesn't have a specific action, but decision makers would have choices among many optional actions. See what you think, and by all means reject any changes that you don't think improve the paper.

Once it's approved over there, send it back to us to distribute as advance reading before Wednesday's meeting. Thanks, and see you next week!

Sara

Sara D. DeCair

http://www.epa.gov/radiation/rert/pags.html

202-343-9108

Briefing for Peter Grevatt & Mike Flynn
Regarding Progress on
Drinking Water Protective Action Guides
March 19, 2014

Purpose:

- Provide an update on the status of developing a drinking water PAG
- Request feedback on SRMD's approach to developing a drinking water protective action guide.
- Seek guidance on how to effectively engage stakeholders.

Agenda (Proposed):

- PAGs overview, history, basis and precedent – (Sara DeCair)
- Drinking Water PAG Proposed Approach – (Sam Hernandez-Quinones)
- Options to communicate the proposal alongside the final PAG Manual – (Sara DeCair)

Draft PAG Manual – April 2013

EPA Stated:
"EPA is not proposing a specific drinking water PAG at this time. EPA has established enforceable drinking water standards for radionuclides under the Safe Drinking Water Act (SDWA). EPA recommends that, to the extent practicable, emergency measures for drinking water be based on the National Primary Drinking Water Regulations (NPDWR) for Radionuclides… *However, in light of the Fukushima nuclear power plant accident, in which some Japanese drinking water supplies were impacted, the Agency recognizes a short-term emergency drinking water guide may be useful for public health protection The Agency requests input on the appropriateness of, and possible values for, a drinking water PAG."*

Activities to Date:

- SRMD is currently developing reports on 1) drinking water radiation PAG values and supporting rationales and 2) assessment of projected risks to different sup-populations associated with radiation exposure from drinking water. These reports will be used to inform selection of threshold levels for the drinking water PAG.

- SRMD and ORIA met to discuss assumptions for exposure, dosimetry and conversion factors to ensure consistency.

- Compiling and evaluating public comments related to a drinking water PAG
    - Received about 35 Letters with significant, lengthy and specific comments regarding drinking water.
    - Comment letters received from State Governments (Department of Public Health, Department of Environmental Protection, and Radiation Programs), Trade Organizations (AWWA, NEI), Professional Societies, private citizens, and Citizen Organizations opposed to Nuclear Power.
    - Comments range from: requesting EPA to withdraw PAG document and implement

SDWA numbers as protective values to adopting PAGs values consistent with previous approaches by FDA, DHS and others.

- SRMD is currently drafting responses to comments received on the Draft PAG Manual regarding drinking water. SRMD will continue coordinating efforts with the Office of Air to ensure consistency throughout the PAGs document.

SRMD Proposed Approach for Developing Options for a Drinking Water PAG

- SRMD will prepare a table with a range of dose values based on resulting projected risks for different targeted sub populations and different time scales.
    - The table will provide detailed information for EPA leadership to select a drinking water PAG.
    - Select a single PAG value or a range of values to allow state and local emergency responders increased flexibility.

- Risks levels would depend on Age, Exposure Time Frame, and Intake Rates. Calculated risks would also be informed by the most recent and widely accepted dosimetry and dose conversion factors.

Example Table to Aide in the selection of Drinking Water PAGs Options

Sub-Population / Group	Dose	Projected Risk	Incident Duration
Infants			
Pregnant Women			
Children			
Women			
Male			
ALL			

Assumptions:
Dose = Provided in millirem, as the projected dose resulting from a radiation incident. SRMD is currently evaluating dose scenarios ranging from 4 mrem up to 500 mrem.

Risk = Calculated risk of increased cancer cases associated with an exposure to a given dose. Risks are calculated for each sub-population using the latest conversion factors and dosimetry assumptions from International Commission on Radiation Protection (ICRP) Report 60.

Precautionary Actions = Different options that could range from notifications, increased monitoring, and enhanced treatment up to the Protective Action "Do Not Drink" level, returning as soon as possible to compliance levels among others.

Exposure Duration = Developing data for a number of options ranging from 30 days to 1 Year.

Concentration = Measurable activity per volume of a nuclide corresponding to each risk value.

Example Drinking Water Risk & Concentrations Table in PAG Document		
Sub-Population / Group	**Dose (mrem)**	**Concentration of I-131**
Infants	###	###
Pregnant Women	###	###
Children	###	###
Women	###	###
Male	###	###
All	4	###
Precautionary Action options: Connect to neighboring water supply; recommend using bottled water for mixing infant formula; use water for showering but not drinking or cooking; restrict cistern water use for cooking and drinking; filter at the plant; offer home filters for concerned citizens; truck in clean water; provide bottled water for all affected citizens; conduct increased monitoring; limit water intake to 1 Liter per day. Implement one or more of these options as appropriate based on risk tiers noted above.		

Options for communicating a water proposal:

- Hold a focused stakeholder engagement on water proposal prior to Manual finalization, instead of issuing the proposal in the Federal Register.

- Issue a Federal Register Notice to get feedback on water proposal prior to Manual finalization. (But our Manual will be done in June! Don't want to delay.)

- Include water proposal in final Manual, asking for comment within 30 days, and then reissue Manual if edits are needed.

Proposed Schedule/Milestones:

- June 2014 – complete PAG Manual comment resolution and editing to include briefing PAG Interagency Subcommittee on water proposal, and incorporating it with their consensus.
- September 2014 – Submit a final draft PAG Manual to OMB.

Ideas for streamlining intra- and inter-agency reviews:

- Start briefings [now? or] in June with top leadership to keep the feedback at a strategic level. Include enough details to explain all changes in Early & Intermediate Phase chapters, and that no changes were needed in Late Phase chapter.

- Brief the interagency PAG Subcommittee on the water proposed approach.

- Brief Bob Perciasepe if and when he is interested.

- Talk with OMB about process and FR Notice of Final Manual, water proposal.

- Variables that could impact this timeline:
    - Internal agency review demands.
    - OMB priorities and required review period.
    - Complexity of comments returned from interagency review.

Background:

The U.S. Environmental Protection Agency (EPA) is in the process of revising a Manual to assist public officials in planning for emergency response to radiological incidents. A radiological incident is an event or a series of events, deliberate or accidental, leading to the release or potential release into the environment of radioactive materials in sufficient quantity to warrant consideration of protective actions.

During an incident with an uncontrolled source of radiation, protection of the public from unnecessary exposure to radiation may require some form of intervention that will disrupt normal living. Such intervention is termed a protective action. Examples of protective actions include: evacuating an area; sheltering-in-place within a building or protective structure; administering potassium iodide (KI) to protect the thyroid; acquiring an alternate source of drinking water; interdiction of food/milk.

The Manual will provide recommended numerical protective action guides (PAGs) for the principal protective actions available to public officials during a radiological incident. A PAG is defined as the projected dose to an individual from a release of radioactive material at which a specific protective action to reduce or avoid that dose is recommended. PAGs do not establish an acceptable level of risk for normal, nonemergency conditions, nor do they represent the boundary between safe and unsafe conditions.

EPA published a draft manual in April 2013 and requested comments on the proposed PAGs. No specific drinking water PAG was proposed at the time, but EPA expects to propose a drinking water PAG when the Final Manual is published by the end of 2014.

TAB staff continues to work closely with representatives from the Office of Air in developing the drinking water PAG.

Protective Action Guides in the 1992 Manual

Phase	Protective Action	Protective Action Guide
Intermediate (weeks/months to 1 yr)	Relocation of the public	2 rem projected dose first year. Subsequent years, 0.5rem/y projected dose
	Food interdiction	0.5 rem/y projected dose, or 5 rem/y to any individual organ or tissue, whichever is limiting
	Drinking water interdiction	Promised

To: DeCair, Sara[DeCair.Sara@epa.gov]; DeCair, Sara[DeCair.Sara@epa.gov]; Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]; Ellis, Jerry[Ellis.Jerry@epa.gov]
Cc: Perrin, Alan[Perrin.Alan@epa.gov]; Veal, Lee[Veal.Lee@epa.gov]; Edwards, Jonathan[Edwards.Jonathan@epa.gov]
From: Christ, Lisa
Sent: Mon 3/17/2014 5:23:43 PM
Subject: Re: Some edits to H2O briefing; due Monday

Sam and Sara
Thanks for continuing to refine the document. The second table entitled example drinking water risk and concentration table...the Precautionary Actions footnote has an extensive list of actions. I wouldn't want to give the impression we are considering providing concentrations/risk levels for each if them. I'd suggest removing from the document but using for talking points
Lisa

Sent from my BlackBerry 10 smartphone on the Verizon Wireless 4G LTE network.

[redacted]

Sorry, I just noticed a missing "of" in the text box on page 1. This version is corrected. Thanks!

From: DeCair, Sara
Sent: Friday, March 14, 2014 5:11 PM
To: Hernandez-Quinones, Samuel; Christ, Lisa; Ellis, Jerry
Cc: Perrin, Alan; Veal, Lee; Edwards, Jonathan
Subject: Some edits to H2O briefing; due Monday

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Once it's approved over there, send it back to us to distribute as advance reading before Wednesday's meeting. Thanks, and see you next week!

Sara

Sara D. DeCair

http://www.epa.gov/radiation/rert/pags.html

202-343-9108

To: Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]
From: Christ, Lisa
Sent: Mon 3/17/2014 8:49:08 PM
Subject: Fw: Drinking Water PAG briefing
Grevatt-Flynn Briefing PAGs sara markup 3-14-2014_LC.docx
Grevatt-Flynn Briefing PAGs sara markup 3-14-2014_LC.docx

Sent from my BlackBerry 10 smartphone on the Verizon Wireless 4G LTE network.

[redacted]

I moved the actions out of the table -- I'd prefer not to give the impression that certain actions may be tied to certain risk/concentration. I'd anticipate a question as to how we'll determine an acceptable level for bathing vs drinking/cooking. Also, we may want to simplify the "action" for example seek alternative drinking water could be met through interconnection, bottled water or hauled water. Let me know if the attached changes work for you.
Lisa

On Monday, March 17, 2014 4:12 PM, Lisa Christ <Ex. 6 - Personal Privacy@yahoo.com> wrote:

To: Veal, Lee[Veal.Lee@epa.gov]
From: Christ, Lisa
Sent: Tue 3/18/2014 8:35:56 PM
Subject: RE: Some edits to H2O briefing; due Monday

Of course, we may need/want input from Bob P. We're hopeful our AA can give us some guidance on levels/ranges.

From: Veal, Lee
Sent: Tuesday, March 18, 2014 3:20 PM
To: Christ, Lisa
Subject: RE: Some edits to H2O briefing; due Monday

Thank you!

Lee Ann B. Veal

Director, Center for Radiological Emergency Management

Radiation Protection Division, ORIA, OAR

Office: 202-343-9448

Cell: 202-617-4322

www.cpa.gov/radiation

From: Christ, Lisa
Sent: Tuesday, March 18, 2014 3:18 PM
To: Veal, Lee
Subject: RE: Some edits to H2O briefing; due Monday

Hi Lee,

This Wednesday's briefing is to get agreement on the approach. May is when we'd like a decision on the value or range for a drinking water PAG from OW..

Lisa

From: Veal, Lee
Sent: Tuesday, March 18, 2014 1:42 PM
To: Christ, Lisa
Subject: RE: Some edits to H2O briefing; due Monday

Hi Lisa,

Is that a decision on levels or on the overall approach?

Lee

Lee Ann B. Veal

Director, Center for Radiological Emergency Management

Radiation Protection Division, ORIA, OAR

Office: 202-343-9448

Cell: 202-617-4322

www.epa.gov/radiation

From: Christ, Lisa
Sent: Tuesday, March 18, 2014 12:07 PM
To: Veal, Lee; DeCair, Sara; Hernandez-Quinones, Samuel; Ellis, Jerry
Cc: Perrin, Alan; Edwards, Jonathan; Burneson, Eric
Subject: RE: Some edits to H2O briefing; due Monday

Hi Lee,

We're planning to brief OW decision makers on the table described below in mid/late May.

Our intent is to have an OW decision at this briefing.

Lisa

From: Veal, Lee
Sent: Tuesday, March 18, 2014 11:53 AM
To: Christ, Lisa; DeCair, Sara; Hernandez-Quinones, Samuel; Ellis, Jerry
Cc: Perrin, Alan; Edwards, Jonathan; Burneson, Eric
Subject: RE: Some edits to H2O briefing; due Monday

Lisa,

Thank you so much for the edits and markup.

Would it be possible to identify any scheduling information for when key items might be available? I suspect that Mike will be asking. I am thinking most specifically about these next items:

SRMD Proposed Approach for Developing Options for a Drinking Water PAG

-

▪ SRMD will prepare a table with a range of dose values based on resulting projected risks for different targeted sub populations and different time scales.

o The table will provide detailed information for EPA leadership to select a drinking water PAG.

o Select a single PAG value or a range of values to allow state and local emergency responders increased flexibility.

Lee

Lee Ann B. Veal

Director, Center for Radiological Emergency Management

Radiation Protection Division, ORIA, OAR

Office: 202-343-9448

Cell: 202-617-4322

www.epa.gov/radiation

From: Christ, Lisa
Sent: Tuesday, March 18, 2014 9:02 AM
To: DeCair, Sara; Hernandez-Quinones, Samuel; Ellis, Jerry
Cc: Perrin, Alan; Veal, Lee; Edwards, Jonathan; Burneson, Eric
Subject: RE: Some edits to H2O briefing; due Monday

Hi Sara,

I wanted to catch up after our email exchange yesterday. I've attached the briefing document that incorporates my revisions. I moved the precautionary actions out of the table and into a new section. Let me know if we need to make any other changes or you'd like to discuss mine.

Thanks-

Lisa

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Sent: Friday, March 14, 2014 5:11 PM
To: Hernandez-Quinones, Samuel; Christ, Lisa; Ellis, Jerry
Cc: Perrin, Alan; Veal, Lee; Edwards, Jonathan
Subject: Some edits to H2O briefing; due Monday

Sam,

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Sara

Sara D. DeCair

http://www.epa.gov/radiation/rert/pags.html

202-343-9108

To: DeCair, Sara[DeCair.Sara@epa.gov]; Veal, Lee[Veal.Lee@epa.gov]; Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]; Ellis, Jerry[Ellis.Jerry@epa.gov]
Cc: Perrin, Alan[Perrin.Alan@epa.gov]; Edwards, Jonathan[Edwards.Jonathan@epa.gov]; Burneson, Eric[Burneson.Eric@epa.gov]
From: Christ, Lisa
Sent: Wed 3/19/2014 12:53:23 PM
Subject: RE: Plz choose final version & send to Mike Flynn: H2O briefing
Grevatt-Flynn Briefing PAGs 3-18-2014_SHQ.docx

Hi Sara,

I've attached the version Sam sent Peter yesterday. I think the content is mostly the same between the two versions, with a slight difference in presentation of the "potential protective actions". We're happy to make changes if you'd like and we can print revised copies before the meeting.

Lisa

From: DeCair, Sara
Sent: Wednesday, March 19, 2014 8:34 AM
To: Christ, Lisa; Veal, Lee; Hernandez-Quinones, Samuel; Ellis, Jerry
Cc: Perrin, Alan; Edwards, Jonathan; Burneson, Eric
Subject: Plz choose final version & send to Mike Flynn: H2O briefing

Hi all, sorry if my being out the last two days caused any last minute mix of versions of this briefing! I'm hosting an ORD briefing til 11 am so I can't respond to email or phone calls.

Attached are two versions I got yesterday about 2:45 pm and if OW could choose which clean version you'd like to go with as final, I hope we can send it to Mike Flynn this morning. He was just asking for a read-ahead. I can make copies before we come over.

Thanks for all your work on this and see you later this afternoon,

Sara

From: Christ, Lisa
Sent: Tuesday, March 18, 2014 12:07 PM
To: Veal, Lee; DeCair, Sara; Hernandez-Quinones, Samuel; Ellis, Jerry
Cc: Perrin, Alan; Edwards, Jonathan; Burneson, Eric
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Lee

Lee Ann B. Veal

Director, Center for Radiological Emergency Management

Radiation Protection Division, ORIA, OAR

Office: 202-343-9448

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www.epa.gov/radiation

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Sara

Sara D. DeCair

http://www.epa.gov/radiation/rert/pags.html

202-343-9108

To: Burneson, Eric[Burneson.Eric@epa.gov]
From: Christ, Lisa
Sent: Tue 3/18/2014 8:34:19 PM
Subject: FW: Document for Peter's Briefing on 3/19/14 DW PAGs
Grevatt-Flynn Briefing PAGs 3-18-2014_SHQ.docx
Briefing for Peter Grevatt_compare.docx

I've also attached a redline/strikeout comparison to the briefing for Peter.

From: Hernandez-Quinones, Samuel
Sent: Tuesday, March 18, 2014 4:28 PM
To: Lopez-Carbo, Maria; Mason, Paula
Cc: Christ, Lisa
Subject: Document for Peter's Briefing on 3/19/14 DW PAGs

Document for Peter's Joint Briefing with Mike Flynn is Attached.

Thank You

Sam

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Environmental Protection Agency
Office of Water
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

To: DeCair, Sara[DeCair.Sara@epa.gov]; Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]; Ellis, Jerry[Ellis.Jerry@epa.gov]
Cc: Perrin, Alan[Perrin.Alan@epa.gov]; Veal, Lee[Veal.Lee@epa.gov]; Edwards, Jonathan[Edwards.Jonathan@epa.gov]; Burneson, Eric[Burneson.Eric@epa.gov]
From: Christ, Lisa
Sent: Tue 3/18/2014 1:01:42 PM
Subject: RE: Some edits to H2O briefing; due Monday
Grevatt-Flynn Briefing PAGs sara markup 3-14-2014_LC.docx

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202-343-9108

To: Veal, Lee[Veal.Lee@epa.gov]
From: Christ, Lisa
Sent: Tue 3/18/2014 7:18:09 PM
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Sara D. DeCair

http://www.epa.gov/radiation/rert/pags.html

202-343-9108

To: Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]; Ellis, Jerry[Ellis.Jerry@epa.gov]
From: Christ, Lisa
Sent: Tue 3/18/2014 3:57:34 PM
Subject: FW: Some edits to H2O briefing; due Monday

Can we provide a tentative date for when we'll be prepared to come back to decision makers with the table?

From: Veal, Lee
Sent: Tuesday, March 18, 2014 11:53 AM
To: Christ, Lisa; DeCair, Sara; Hernandez-Quinones, Samuel; Ellis, Jerry
Cc: Perrin, Alan; Edwards, Jonathan; Burneson, Eric
Subject: RE: Some edits to H2O briefing; due Monday

Lisa,

Thank you so much for the edits and markup.

Would it be possible to identify any scheduling information for when key items might be available? I suspect that Mike will be asking. I am thinking most specifically about these next items:

SRMD Proposed Approach for Developing Options for a Drinking Water PAG

- SRMD will prepare a table with a range of dose values based on resulting projected risks for different targeted sub populations and different time scales.

- The table will provide detailed information for EPA leadership to select a drinking water PAG.

- Select a single PAG value or a range of values to allow state and local emergency responders increased flexibility.

Lee

Lee Ann B. Veal

Director, Center for Radiological Emergency Management

Radiation Protection Division, ORIA, OAR

Office: 202-343-9448

Cell: 202-617-4322

www.epa.gov/radiation

From: Christ, Lisa
Sent: Tuesday, March 18, 2014 9:02 AM
To: DeCair, Sara; Hernandez-Quinones, Samuel; Ellis, Jerry
Cc: Perrin, Alan; Veal, Lee; Edwards, Jonathan; Burneson, Eric
Subject: RE: Some edits to H2O briefing; due Monday

Hi Sara,

I wanted to catch up after our email exchange yesterday. I've attached the briefing document that incorporates my revisions. I moved the precautionary actions out of the table and into a new section. Let me know if we need to make any other changes or you'd like to discuss mine.

Thanks-

Lisa

From: DeCair, Sara
Sent: Friday, March 14, 2014 5:11 PM
To: Hernandez-Quinones, Samuel; Christ, Lisa; Ellis, Jerry
Cc: Perrin, Alan; Veal, Lee; Edwards, Jonathan
Subject: Some edits to H2O briefing; due Monday

Sam,

I made several cosmetic changes in the attached version (you can see the redline if you switch to Final Showing Markup in Word) and decoupled the Precautionary Actions from the risk numbers so that each risk level/concentration doesn't have a specific action, but decision makers would have choices among many optional actions. See what you think, and by all means reject any changes that you don't think improve the paper.

Once it's approved over there, send it back to us to distribute as advance reading before Wednesday's meeting. Thanks, and see you next week!

Sara

Sara D. DeCair

http://www.epa.gov/radiation/rert/pags.html

202-343-9108

To: Lopez-Carbo, Maria[Lopez-Carbo.Maria@epa.gov]
Cc: Burneson, Eric[Burneson.Eric@epa.gov]; Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]; Ellis, Jerry[Ellis.Jerry@epa.gov]; Oshida, Phil[Oshida.Phil@epa.gov]
From: Christ, Lisa
Sent: Tue 2/11/2014 8:41:56 PM
Subject: Briefing Paper for Rads PAG
Grevatt Briefing PAGs Feb 2014 Ver5.docx

Hi Maria-

Attached is the briefing paper for tomorrow's meeting with Peter on the drinking water radiation Protective Action Guide (PAG).

~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

Lisa Christ, Associate Chief

Targeting and Analysis Branch

Office of Ground Water and Drinking Water

USEPA

1200 Pennsylvania Ave NW
Washington, DC 20460-0001
phone: 202.564.8354
fax: 202.564-3760

Mail Code: 4607M
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

To: Grevatt, Peter[Grevatt.Peter@epa.gov]
Cc: Burneson, Eric[Burneson.Eric@epa.gov]; Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]; Ellis, Jerry[Ellis.Jerry@epa.gov]
From: Christ, Lisa
Sent: Wed 2/19/2014 6:28:54 PM
Subject: Radiation PAG Letters
080509LetterToEPA.pdf
Grp Ltr to EPA on Rad Issues 8-15-11.pdf

Peter,

During last week's briefing on the drinking water radiation PAG, I mentioned letters submitted by enviro groups raising concerns about potential drinking water PAG values that are greater than the MCL. The letters are attached and include the report they developed entitled "PROPOSED WEAKENING OF PROTECTIVE ACTION GUIDES (PAGs) FOR RADIOLOGICAL RELEASES" which was "cited" in some public comments received on the draft manual.

Lisa

To: Burneson, Eric[Burneson.Eric@epa.gov]
From: Christ, Lisa
Sent: Wed 2/19/2014 3:44:30 PM
Subject: revised PAG briefing paper
Grevatt Briefing PAGs Feb 2014 Ver5_lc.docx

Let me know if you 'd like additional changes..If not, I'll finalize and get to Maria and ORIA

Lisa

To: Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]
From: Christ, Lisa
Sent: Tue 4/29/2014 10:11:40 PM
Subject: RE: Revised Briefing Paper
Briefing for Eric Burneson_SHQ 4-29_clean.docx
Briefing for Eric Burneson_SHQ 4-29_LC (2).docx

Hi Sam,

I moved several things around to be more in line with the format Peter likes. He prefers to have background information last. The questions/points Sara added to the "agenda" portion would be better as talking points when/if we get to the options for soliciting public comment. It's likely we'll run out of time before we get to that. Let's do a quick checking in the morning.

Thanks-

Lisa

From: Hernandez-Quinones, Samuel
Sent: Tuesday, April 29, 2014 2:06 PM
To: Christ, Lisa
Subject: Revised Briefing Paper

Attached.

Sam

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Environmental Protection Agency
Office of Water
1200 Pennsylvania Ave. NW
Washington, DC 20460

202-564-1735

"USEPA Protecting Human Health and the Environment"

Briefing for Eric Burneson
Drinking Water Radiation Protective Action Guide
April 30, 2014

Purpose:

- Seek agreement on guiding principles and assumptions for the drinking water PAG.
- Provide options for selecting a drinking water PAG.
- Seek guidance on process to solicit public comment.

Guiding Principles & Assumptions:

EPA's contractor prepared extensive tables to evaluate multiple radiation scenarios. For example the tables assessed:

- Different event durations (i.e., 30 days, 60 days…365 days)
- Different subpopulations
- Different dose levels
- Different nuclides of concern

Findings:

Exposure Duration:

For low level radiation, the risks do no vary with the duration of exposure. Assuming exposure is distributed over one year yields no difference in risk than if the exposure is 30 days.

- The one year timeframe is consistent with other intermediate phase PAGs.
- Emergency responders will not need to make assumptions about the duration of the event.
- A longer exposure duration will result in a lower allowed concentration while maintaining the desired risk level.

Water Ingestion Rates:

Ingestion rates have been incorporated from Federal Guidance Report #13, which uses mean values for consumption/intake.

- The ingestion rates in Federal Guidance 13 are consistent with ingestion rates in the EPA's Exposure Factors Handbook.
- Using mean values for consumption/intake is a departure from the current OGWDW approach of setting health based standards on higher percentiles of water consumption, 90th or 95th percentiles.

Subpopulation of Concern:

Based on the calculated projections, infants and children 5 years old and younger appear to have the greatest risk from exposure to radionuclides in drinking water.

- A PAG developed to protect infants and children 5 years and younger would also be at least as protective to fetuses and developing embryos.
- Selecting a PAG that protects infants and children 5 years old and younger will be conservative in protecting other populations.

Calculated Risk Ranges:
Projected risk for excess cancer cases associated with different exposure scenarios were developed for infants, children and adults. The results from these projections of the estimated excess cases of cancer generally fall within the range of risks currently found in our DW Radionuclides Rule (10^{-4} to 10^{-6}) for all projected doses evaluated (e.g., 4 mrem to 500 mrem).

There are a few exceptions where the risk levels approach the 10^{-3} for dose levels higher than 250 mrems/year.

- Most of the evaluated doses fall within the risk range of the Radionuclides Rule beta and photon emitters MCL.
- Even at a low dose level, newer dosimetry and a shorter duration will result in a PAG concentration orders of magnitude higher than our MCLs for individual nuclides.

Options for a Drinking Water PAG:
Basis for Dose Levels:
4 mrem = Dose for current SDWA MCL
25 mrem = Equivalent to Advisory Level issued in Japan for a 90 day exposure (Infants)
75 mrem = Proportion of the FDA food PAG attributed to drinking water
100 mrem = Internationally recognized public dose limit and the Nuclear Regulatory Commission's facility limit for the general public (ICRP 103 and NCRP 116)
250 mrem = Equivalent to Advisory Level issued in Japan for a 365 day exposure (Adults)
500 mrem = Dose Value recommended by DHS (for drinking water) & FDA (for Food)

Iodine-131
SDWA Derived MCL Concentration 3 pCi/L

Dose (mrems)	4 mrem	25 mrem	100 mrem	250 mrem	500 mrem
Subpopulation Highest Risk	Infant	Infant	Infant	Infant	Infant
Projected Risk	4.67E-06	2.92E-05	1.17E-04	2.92E-04	5.84E-04
Corresponding Concentration (pCi/L)	84	527	2110	5270	10500
Most Restrictive Concentration (pCi/L) (5 yr old Child)	52	328	1310	3280	6570
Projected Risk	4.08E-06	2.55E-05	1.02E-04	2.55E-04	5.10E-04

Recommendations:

- Recommend that a "do not drink" PAG level be established based on the risk levels

developed from exposure to drinking water. Other protective action (i.e. do not drink level for general population) could be based on a selected risk level for the subpopulation of interest.

- Recommend that I-131 be used as the main indicator for assessing risks for the radiological incident covered in the PAG manual. It's generally the first nuclide to appear following a radiation incident.
- Recommend an exposure time frame of one year to assure consistency with the other intermediate phase components of the PAG.
- Recommend establishing a "do not drink" PAG level (i.e. mrem/year) that groups infants, children 5 years and younger, and pregnant women in the same category.

Options for Soliciting Public Comment:

Separate FRN for drinking water PAG proposal:

Pros:

- ✓ More transparent and sincere solicitation of input
- ✓ Avoids confusion of interim final, proposal, and final Manual
- ✓ Allows time to do more refinements and improvements in final PAG Manual

Cons:

- ✓ Delays issuance of final PAG Manual
- ✓ Potentially pushes finalization into election cycle delays at OMB
- ✓ May confuse users about status of interim 2013 PAG Manual

Combined FRN for drinking water proposal within final PAG Manual:

Pros:

- ✓ Provides final PAG Manual sooner to users
- ✓ Avoids additional delays in OMB review
- ✓ Allows interim use of water proposal in case of an incident

Cons:

- ✓ Agency may appear less willing to take input and revise/reissue final Manual
- ✓ Still requires another round of comment adjudication and finalization if changes needed

Background Information:

- Current DW Regulations for Radionuclides (Combined Radium 226+228 & Beta and Photon), generally fall within the lifetime cancer risk range of 10^{-4} to 10^{-6} from exposure (65 FR 76712). This assumes a life time exposure of 70 years.
- DW Advisory issued in Japan during Fukushima for Iodine-131 was 100 Becquerel/liter for Infants and 300 Becquerel/liter for Adults (about 2700 pCi/L for Infants & 8000 pCi/L for Adults).
- OGWDW was tasked with developing a PAG (expressed as a dose value) for drinking water which will be included in the EPA PAGs Manual.

Definition of Terms:

- A rem is an expression of the amount of ionizing radiation absorbed by tissue multiplied by the a quality factor that takes into consideration the relative potential amount of damage the radiation might cause; a mrem (millirem) is 0.001 rem.
- A curie (Ci) is an expression of the amount of radioactivity that corresponds to that amount of radioactive material (atoms or grams) that has a decay rate of 3.7E10 disintegrations per second (dps). A picocurie (pCi) is one trillionth (i.e., 10-12) of a Ci.
- One becquerel (Bq) is the amount of a radioactive material (atoms or grams) that decays at a rate of 1 disintegration per second.

Briefing for Eric Burneson
Drinking Water Radiation Protective Action Guide
April 30, 2014

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OGWDW was tasked with developing a PAG (expressed as a dose value) for drinking water which will be included in the EPA PAGs Manual.

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- A curie (Ci) is an expression of the amount of radioactivity that corresponds to that amount of radioactive material (atoms or grams) that has a decay rate of 3.7E10 disintegrations per second (dps). A picocurie (pCi) is one trillionth (i.e., 10-12) of a Ci.
- One becquerel (Bq) is the amount of a radioactive material (atoms or grams) that decays at a rate of 1 disintegration per second.

To: Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]
From: Christ, Lisa
Sent: Thur 5/15/2014 7:28:33 PM
Subject: RE: Revised Document
Joint Briefing PGrevatt-Flynn May-15_lc.docx

Hi Sam –

Just a small edit by me and a comment/question from Eric – see attached

Thanks

Lisa

From: Hernandez-Quinones, Samuel
Sent: Thursday, May 15, 2014 11:54 AM
To: Christ, Lisa
Subject: Revised Document

Hi Lisa,

This version has the basis for the portion of DW from the total Food Diet.

Sam

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Samuel Hernández Quiñones, P.E.
Environmental Engineer
Environmental Protection Agency
Office of Water
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

To: Lopez-Carbo, Maria[lopez-carbo.maria@epa.gov]
Cc: Hernandez-Quinones, Samuel[hernandez.samuel@epa.gov]; Ellis, Jerry[Ellis.Jerry@epa.gov]; Burneson, Eric[burneson.eric@epa.gov]; Mason, Paula[Mason.Paula@epa.gov]
From: Christ, Lisa
Sent: Fri 5/2/2014 6:26:48 PM
Subject: Materials for Radiation PAG Brief on May 5
Brieifng for PGrevatt_SHQ 5-1_LC.docx

Hi Maria,

Attached are the materials for Monday's pre-brief for Peter.

Thanks and have a great weekend!

Lisa

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Lisa Christ, Acting Chief

Targeting and Analysis Branch

Office of Ground Water and Drinking Water

USEPA

1200 Pennsylvania Ave NW
Washington, DC 20460-0001
phone: 202.564.8354
fax: 202.564-3760

Mail Code: 4607M
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

To: Hernandez-Quinones, Samuel[hernandez.samuel@epa.gov]
From: Christ, Lisa
Sent: Fri 5/2/2014 6:29:21 PM
Subject: FW: Materials for Radiation PAG Brief on May 5
Brieifng for PGrevatt_SHQ 5-1_LC.docx

Hi Sam,

I spoke with Eric last night about how best to go over the equations, etc with Peter. We agreed to move it to the an appendix and we'll offer Peter a quick tutorial if he wants. If he doesn't feel he needs it we'll go straight to the briefing. I made a few other minor wording changes too.

Thanks-

Lisa

From: Christ, Lisa
Sent: Friday, May 02, 2014 2:27 PM
To: Lopez-Carbo, Maria
Cc: Hernandez-Quinones, Samuel; Ellis, Jerry; Burneson, Eric; Mason, Paula
Subject: Materials for Radiation PAG Brief on May 5

Hi Maria,

Attached are the materials for Monday's pre-brief for Peter.

Thanks and have a great weekend!

Lisa

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Lisa Christ, Acting Chief
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Targeting and Analysis Branch

Office of Ground Water and Drinking Water

USEPA

1200 Pennsylvania Ave NW
Washington, DC 20460-0001
phone: 202.564.8354
fax: 202.564-3760

Mail Code: 4607M

To: Burneson, Eric[burneson.eric@epa.gov]
From: Christ, Lisa
Sent: Mon 5/12/2014 6:22:40 PM
Subject: FW: draft Water briefing for ODs -- Sara's markup
Joint Brief Grevatt-Flynn Sara markup 5-8-2014.docx

FYI – ORIA's suggested revisions to the briefing document we used with Peter.

From: DeCair, Sara
Sent: Thursday, May 08, 2014 12:41 PM
To: Hernandez-Quinones, Samuel; Ellis, Jerry; Christ, Lisa; Veal, Lee
Subject: draft Water briefing for ODs -- Sara's markup

Sam,

I didn't do all the deletions that I am suggesting, but I hope I've provided enough of my perspective to help you decide which of my edits to take. It's easier to look at with "No Markup" but see what you think about my adjusted Recommendations, the table, and a shorter timeline that focuses on things ODs would care about.

Lee helped me with these suggestions and I'm sure between you, me, Lisa and Lee, we can get a very good version together for our next pre-briefing which is at 2:30 pm on Monday, via phone bridge. Call or write with any questions or concerns – thanks!!

Sara

Sara D. DeCair

http://www.epa.gov/radiation/rert/pags.html

202-343-9108

To: Burneson, Eric[burneson.eric@epa.gov]
From: Christ, Lisa
Sent: Mon 5/12/2014 6:23:42 PM
Subject: FW: draft briefing paper for reds PAG???
Joint Brieifng PGrevatt-Flynn May-12 SHQ.docx

From: Hernandez-Quinones, Samuel
Sent: Monday, May 12, 2014 2:23 PM
To: Christ, Lisa
Subject: RE: draft briefing paper for rads PAG???

see attached.

Sam

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Environmental Protection Agency
Office of Water
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Christ, Lisa
Sent: Monday, May 12, 2014 2:16 PM
To: Hernandez-Quinones, Samuel
Subject: draft briefing paper for rads PAG???

Do you have the revised document ready so we can discuss during the call?

Thanks-

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Lisa Christ, Acting Chief

Targeting and Analysis Branch

Office of Ground Water and Drinking Water

USEPA

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Washington, DC 20460-0001
phone: 202.564.8354
fax: 202.564-3760

Mail Code: 4607M
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Joint Briefing
Drinking Water Radiation Protective Action Guide
May 20, 2014

Purpose:

- Provide options for selecting a drinking water PAG.
- Seek guidance on process to solicit public comment.

Scenarios Evaluated:

EPA's contractor prepared extensive tables to evaluate multiple radiation scenarios. For example the tables assessed:

- Different event durations (i.e., 30 days, to 365 days)
- Different subpopulations, different dose levels, & different nuclides of concern

Findings from Assessment - Drinking Water PAG:

Iodine-131

*SDWA Derived MCL Concentration 3 pCi/L

Dose (mrem)	4 mrem	75 mrem	500 mrem
Subpopulation Highest Risk	Infant	Infant	Infant
Projected Risk	4.67E-06	8.70E-05	5.84E-04
Concentration (pCi/L)	84	1,580	10,500
Most Restrictive Concentration) (pCi/L, 5 yr old)	52	985	6,570
Projected Risk	4.08E-06	7.65E-05	5.10E-04

Cesium-137

*SDWA Derived MCL Concentration 200 pCi/L

Dose (mrems)	**4 mrem**	**75 mrem**	**500 mrem**
Subpopulation Highest Risk	Infant	Infant	Infant
Projected Risk	6.45E-06	1.20E-04	8.06E-04
Corresponding Concentration (pCi/L)	735	13,797	91,900

Basis for Dose Levels:

4 mrem = Dose for current SDWA MCL
75 mrem = Proportion of the FDA food PAG attributed to drinking water
500 mrem = Dose Value recommended by DHS (for drinking water) & FDA (for Food)

Note: Even at a low dose level, newer dosimetry and a shorter duration (i.e., one year vs. a lifetime) will result in a PAG concentration orders of magnitude higher than our MCLs for individual nuclides.

Findings:

Exposure Duration:

For low level radiation, the risks do no vary with the duration of exposure. Assuming exposure is distributed over one year yields no difference in risk than if the exposure is 30 days.

- The one year timeframe is consistent with other intermediate phase PAGs.
- Emergency responders will not need to make assumptions about the duration of the event.
- A longer exposure duration will result in a lower allowed concentration while maintaining the desired risk level.

Water Ingestion Rates:

Ingestion rates have been incorporated from Federal Guidance Report #13, which uses mean values for consumption/intake.

- The ingestion rates in Federal Guidance 13 are consistent with ingestion rates in the EPA's Exposure Factors Handbook.

Subpopulation of Concern:

Based on the calculated projections, infants and children 5 years old and younger appear to have the greatest risk from exposure to radionuclides in drinking water.

- A PAG developed to protect infants and children 5 years and younger would also be at least as protective to fetuses and developing embryos.

Calculated Risk Ranges:

Projected risk for excess cancer cases associated with different exposure scenarios were developed for infants, children and adults. The results from these projections of the estimated excess cases of cancer generally fall within the range of risks currently found in our DW Radionuclides Rule (10^{-4} to 10^{-6}) for all projected doses evaluated (e.g., 4 mrem to 500 mrem). This risk would be additive to the overall lifetime risk from drinking water in excess of the MCL.

There are a few exceptions where the risk levels approach the 10^{-3} for dose levels higher than 250 mrem/year.

Recommendations:

- Recommend that a "do not drink" PAG level be established based on the risk levels developed from exposure to drinking water. Other protective action (i.e. "do not drink for general population) could be based on the selected risk level for the subpopulation of interest.
- Recommend that I-131 and Cs-137 be used by EPA decision makers for assessing risks for the radiological incidents covered in the PAG manual; once the dose at the acceptable risk level is selected, the dose can be converted to a concentration for nuclides of concern.

- Recommend an exposure time frame of one year to assure consistency with the other intermediate phase components of the PAG.
- Recommend establishing a "do not drink" PAG level (i.e. mrem/year) that groups infants, children 5 years and younger, and pregnant women in the same category.

Options for Soliciting Public Comment:

Separate FRN for drinking water PAG proposal:

Pros:

✓ More transparent and sincere solicitation of input
✓ Avoids confusion of interim final, proposal, and final Manual
✓ Allows time to do more refinements and improvements in final PAG Manual

Cons:
✓ Delays issuance of final PAG Manual
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Still requires another round of comment adjudication and finalization if changes needed

Timeline for PAGs Publication:

- Draft FR Notice language and PAG Manual water language **(Jun 20)**
- Brief AAs, DA as appropriate **(Jun 20 through Jul 14)**
  - ✓ Begin scheduling process now with the two AAs
  - ✓ Ask AAs to discuss this proposal with the DA
- Brief multi-agency PAGs Subcommittee & get concurrence on proposal **(Jul 21)**
- Have updated Water proposal reviewed by OSWER, OHS and OGC. **(starting Jul 21)**
- Develop Water proposal *Federal Register* package, which will include the following: **(Sep. 1)**
  - Federal Register Notice,
  - Water section of PAG Manual,

- Memorandum from ORIA Office Director to OAR Assistant Administrator,
- Action Memo from OAR Assistant Administrator to EPA Administrator,
- Communications material: Desk statement, key messages.

- OPEI review and facilitation **(Sep 20)**
  - ✓ Sometimes, briefings are needed
  - ✓ Check-ins with leadership are common
- OMB 90-day Review (**Oct 6 ---- Jan 6**)
  - ✓ FR package from AA to OPEI
  - ✓ Initial meeting with OMB desk officer and technical staff
  - ✓ Interagency review through Regulatory Policy Officers
- Finalize edited FR Notice and PAGs Manual **(OMB release + 14 days)**
  - ✓ Incorporate OMB and multi-agency suggestions
  - ✓ Brief EPA's upper management
- Complete *Federal Register* Workflow, including: **(OMB release + 30 days)**
  - ✓ The Federal Register package goes from OPEI to OEX.
  - ✓ Conduct briefings as needed.
  - ✓ The Federal Register package goes from OEX to the Immediate Office of the Administrator for signature.
  - ✓ After signature, the Federal Register package is returned to OEX. OEX delivers the signed package to OPEI.
  - ✓ OPEI forwards the package to the Federal Register for publication.
- Compile and adjudicate comments from public review **(OMB release + 60 days)**

Finalize **(OMB release + 90 days) (Apr. 2015?)**

Appendix

Background Information:

- DW Advisory issued in Japan during Fukushima for Iodine-131 was 100 Becquerel/liter for Infants and 300 Becquerel/liter for Adults (about 2700 pCi/L for Infants & 8000 pCi/L for Adults).
- OGWDW was tasked with developing a PAG (expressed as a dose value) for drinking water which will be included in the EPA PAGs Manual.

Key Terms:

Bq

One becquerel (Bq) is the amount of a radioactive material (atoms or grams) that decays at a rate of 1 disintegration per second.

Ci, pCi, and dps

A curie (Ci) is an expression of the amount of radioactivity that corresponds to that amount of radioactive material (atoms or grams) that has a decay rate of 3.7E10 disintegrations per second (dps). A picocurie (pCi) is one trillionth (i.e., 10-12) of a Ci.

Rem and mrem

A rem is an expression of the amount of ionizing radiation absorbed by tissue multiplied by the a quality factor that takes into consideration the relative potential amount of damage the radiation might cause; a mrem (millirem) is 0.001 rem.

Sv

A sievert (Sv) is 100 rem. Sv is the International System of Units (SI) derived unit of ionizing radiation dose (the rem and mrem are older, non-SI units).

Background on SDWA MCLs

- EPA Maximum Contaminant Level (**4 mrem annual dose**)
  - For I-131 in drinking water the derived concentration corresponds to **3 pCi/L**
  - Based on limiting the dose to the thyroid to 4 mrem/yr
  - Assumes 70-year (lifetime) exposure through drinking water
  - Utilizes dose calculation methods developed in 1958 (ICRP 2)
- Current science (ICRP 72) would calculate the 4 mrem effective dose to the whole body, not a specific organ
  - 55 pCi/L for Children & 120 pCi/L for Adults for I-131

From: Beauvais, Joel
Location: EPA 1201 Constitution Ave NW, Washington DC 20004 WJCE 3233
Please call 202-564-5700 for escort
Importance: Normal
Subject: Drinking Water PAGs Call in 1-866-299-3188 passcode Ex. 6 - Personal Privacy
Start Date/Time: Thur 1/5/2017 8:00:00 PM
End Date/Time: Thur 1/5/2017 9:00:00 PM
Real ID Information.pdf
updated attendees WATER PAGs jan 5 2017 meeting with Office of Water.pdf

From: DeCair, Sara
Location: EPA East Rm. 1153
Importance: Normal
Subject: Water PAG presentation at Interagency Steering Committee on Radiation Standards
Start Date/Time: Wed 2/10/2016 8:00:00 PM
End Date/Time: Wed 2/10/2016 9:00:00 PM

Wednesday, February 10, 2016
1:00 pm - 4:00 pm
Environmental Protection Agency William Jefferson Clinton Building East
1201Constitution Avenue, NW Room 1153
Washington, DC

Introduction/Opening Remarks	1:00 pm - 1:05 pm	Jon Edwards, EPA Vincent Holahan, NRC
IAEA Program in Radiation Safety - Basis Safety Standards and Beyond	1:05 pm - 2:05 pm	Miroslav Pinak, IAEA
LNT Update and Roundtable Discussion	2:05 pm - 3:05 pm	Jerry Puskin, EPA Vince Holahan, NRC
Break		
3:05 pm - 3:10 pm		
Health and Safety Planning Guide For Planners, Safety Officers and Supervisors For Protecting Responders Following A Nuclear Detonation	3:10 pm - 3:30 pm	John MacKinney, DHS
PAGS Update on Drinking Water Proposal	3:30 pm - 4:00 pm	Sara DeCair, EPA Lisa Christ, EPA
Subcommittees Updates		
Federal Guidance	4:00 pm - 4:05 pm	Mike Boyd, EPA

From: Veal, Lee
Location: DCRoomWest1424/OPEI
Importance: Normal
Subject: Review of PAG Material - Comments, Adjudication and Draft Text
Start Date/Time: Tue 12/15/2015 2:00:00 PM
End Date/Time: Tue 12/15/2015 3:00:00 PM
Finalization proposal for EPA Internal Team 12-10-2015.docx
Redline PAG Manual 12-14-2015.docx
Cmt Resolution 12-14-2015.xlsx

Our Office Directors/designees are meeting on Thursday, December 17 to discuss the schedule for finalizing the PAG Manual (full manual, not just the drinking water portion).

I suggest we spend some time before then to share the comments received and our draft changes to the full manual from the 2013 published version. I'll send a separate email with the comments received and the redline of the full manual. IF you'd like to see what was published in 2013 and the comments, here is the link: http://www.epa.gov/radiation/protective-action-guides-pags

We have a conference room in EPA West, 1st floor, room 1424. We will also have a webinar set up if you'd like to take this conference call from your location. Here is that link:

http://epawebconferencing.acms.com/r4ur9l13ifi/

Audio: 1-866-299-3188, Ex. 6 - Personal Privacy

Finalization proposal for EPA Internal Team 12-10-2015.docx Redline PAG Manual 12-14-2015.docx Cmt Resolution 12-14-2015.xlsx

From: Penman, Crystal
Location: 3233 WJCE
Importance: Normal
Subject: Drinking Water Protective Action Guideline
Start Date/Time: Fri 12/4/2015 2:30:00 PM
End Date/Time: Fri 12/4/2015 3:00:00 PM
Drinking Water PAGs Meeting Request.pdf
Drinking Water PAG Background on Radionuclides and PAG 11_30_15.docx
Drinking Water PAG_PAGs 101 10-17-2014.ppt
Drinking Water PAG OW_AA brief 12_4_15.docx
Drinking Water PAG_ Timeline for PAG Manual 10-2-2015_V2.docx

Drinking Water PAGs Meeting Request.pdf Drinking Water PAG Background on Radionuclides and PAG 11_30_15.docx Drinking Water PAG_PAGs 101 10-17-2014.ppt Drinking Water PAG OW_AA brief 12_4_15.docx Drinking Water PAG_ Timeline for PAG Manual 10-2-2015_V2.docx

From: Veal, Lee
Location: DCRoomWest1424/OPEI
Importance: Normal
Subject: PAG comment review
Start Date/Time: Thur 8/13/2015 1:30:00 PM
End Date/Time: Thur 8/13/2015 2:30:00 PM
draft OSWER Comments on draft water PAG 080315.docx
Draft Protective Action Guide 6-16-2015 OGWDW_OSWER Comments 080315.docx

Subject: Branch Chief overview of OSWER comments on Water PAG draft (ODs will meet later in August, technical staff can meet as their schedules permit)

OW and OAR are suggesting this approach as it promotes our getting a draft Water PAG out for public review quickly. I'm attaching the comments for reference. I suggest that we focus on the overarching comments document as a first priority. Thanks

EPA West 1424

From: DeCair, Sara
Location: phone bridge: Ex. 6 - Personal Privacy
Importance: Normal
Subject: Plan for ODs briefing
Start Date/Time: Thur 6/4/2015 3:30:00 PM
End Date/Time: Thur 6/4/2015 4:00:00 PM
Water PAG briefing for ODs 6-2-2015.docx

I'd like to suggest using the attached updated briefing paper for our ODs pre-brief on June 12, so we can get input on how best to approach the June 23 briefing with OSWER. I'm going to run this past Jon and Alan on Thursday morning.

If you're able to call in at this time, we can also talk about any last edits to the FR package materials, which we should have in hand for the briefings. Do let me know if you need me to find another time for this short discussion. Thanks!

Protective Action Guide (PAG) for Drinking Water

Purpose of this briefing:

- Describe a proposed Drinking Water PAG approach
- Discuss how we'll address the controversy associated with this proposal
- Agree on next steps toward publication for comment

What is the problem we're trying to solve?

- Drinking water is the only exposure pathway not currently addressed in the PAG Manual. At what radiation level does EPA recommend alternative drinking water resources be provided?
- Remember, a PAG is a health-based tipping point where actions are warranted to avoid a given radiation exposure.
- While highly unlikely, a large scale radiation contamination incident could impact the US, driving the need for a drinking water PAG that is pre-established and scientifically based.

Background on SDWA MCLs for Radionuclides:
In 1976 EPA issued interim regulations for Radionuclides in Drinking Water. In December 2000, EPA promulgated final regulations for four radionuclide groups:

- Gross Alpha (Minus Radon & Uranium) MCL = 15 pCi/L –Retained from 1976 Rule
- Combined Radium 226 & 228, MCL = 5 pCi/L Retained from 1976 Rule
- Gross Beta & Photon, MCL = 4 mrem/yr (Uses Dose Conversion Factors from 1976 Rule) Retained from 1976 Rule
- Uranium MCL = 30 ug/L, Newly established standard in 2000

The Gross Beta and Photon MCL is unique because it is based on a dose of radiation (measured in mrem) instead of a concentration of a specific radionuclide (measured in pCi/L). There are 179 radionuclides that are "beta-photon" emitters that are regulated as a group under this standard.

As a point of reference, for the gross beta & photon, MCL = 4 mrem annual dose:

- For Iodine-131 in drinking water the derived concentration corresponds to **3 pCi/L**
  - Based on limiting the dose to the thyroid to 4 mrem/yr
  - In 1976 EPA calculated a lifetime risk at this exposure to be 6 x 10^{-5}. Assuming 70-year lifetime exposure through 2 liters drinking water per day
  - Utilizing dose calculation methods developed in 1958 (ICRP 2)

- In 2000 EPA updated the lifetime risk estimates at this exposure to be within the upper and lower bounds of risk (10^{-4} to 10^{-6}) using current science (ICRP 72). The derived concentration would correspond to 55 pCi/L for Children & 120 pCi/L for Adults for I-131. Due to anti backsliding SDWA provision EPA retained the original conversion factors.

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Options considered during PAG development:

a) Do nothing. Local governments or states may develop individual PAG levels, or EPA will need to create one after an incident occurs. Experience has shown that local governments often rely on EPA advice when making decisions regarding the safe use of drinking water after contamination incidents. Radiation protection decisions are almost always based on federal guidance in some form. Affected federal entities (e.g., affected military personnel) will need federal guidance.

b) Use the SDWA MCL (4 mrem) as the level to provide an alternate source of drinking water. MCLs are not intended to inform 'do not drink' levels, in addition MCLs are based on the assumption of a 70 year exposure timeframe.

c) Adopt DHS & FDA benchmarks: 500 mrem from water for first year after an incident (DHS covers water after a terrorist attack and FDA guide applies to food). This allows for consistency with guidance that is already in use and publicly available.

d) Adopt above benchmarks that have long-standing acceptance, and add additional protection for pregnant women and children: 500 mrem for the general population and a lower dose level for children, pregnant women and nursing mothers.

Proposed approach:

- Based on an analysis of radiation risks to all age groups from several nuclides, we propose a two-tiered PAG as a reasonable approach considering age-based radiosensitivity.
- We recommend the drinking water PAG during the intermediate phase of a radiological response be 100 mrem projected dose in the first year for children, pregnant women and nursing mothers, and 500 mrem projected dose in the first year for the general population.

The protective action:

- The protective action is to restrict the use of contaminated water for drinking purposes and to provide alternative drinking water for the affected community. Options for providing alternate drinking water could include: bottled water, altering the raw water source of a water system, interconnection between systems, or a combination of these.

Rationale:

- EPA conducted an assessment of the projected risks of excess cancer cases from exposure to radiation in drinking water at the 500 mrem level for a one year duration incident. The projected risk for adults at the 500 mrem level generally fall around the top of the risk range.
- We conducted a similar assessment from exposure to contaminated drinking water for infants and children, who are more sensitive to radiation exposure, and at that same risk level the corresponding dose guideline would be in the 75 to 100 mrem range.
- This recommended drinking water PAG approach is consistent with PAGs currently in place for other media. PAGs are set by balancing the risks of exposure to radiation against the logistical difficulty, costs and detriments associated with taking protective action to avoid exposure.
- According to the International Commission on Radiation Protection, emergency levels for protection

of people should be selected in the lower part of the 100 to 2,000 mrem/year recommended range. Protection against all exposures, above or below the PAG level, should be balanced against detriments from the protective action itself.

- The government of Japan adopted a similarly tiered drinking water advisory when responding to the radiation incident in Fukushima: 100 Bq/L for infant formula and 300 Bq/L for everyone else.
- We determined that it is not appropriate to base emergency protective actions and response measures during short-term radiation incidents on lifetime (70 year) exposure criteria utilized to derive SDWA Maximum Contaminant Levels (MCL).
- We recognize that within the SDWA framework, water systems in violation of drinking water standards have processes available to get back into compliance within a reasonable time frame. While the SDWA framework is useful to inform actions for day-to-day normal operations, it does not provide adequate guidance for emergency responders on what levels of contamination warrant providing alternative water.
- We assume that any drinking water system adversely impacted during a radiation incident will be able to achieve compliance with MCLs as soon as possible within the first year after the incident.

Key considerations:

- Flexibility is emphasized. Emergency managers should make incident specific decisions that make sense for their community.
- Some PAGs lend themselves to age specificity (KI, food, water) while others are best applied to entire populations (sheltering, evacuation, and relocation). The goal is to protect everyone, including the most sensitive (children and pregnant women) while being practical with what may be limited alternative drinking water resources.
  - From a public information standpoint, the Manual may need to provide further information on the practical implementation challenges with a two tier water protection strategy. The KI simplified approach is an example of this.
- Pre-incident planning is encouraged. Pre-incident planning can help a community identify the best alternative water choices.

Stakeholder reaction:

- In response to a previous proposal, anti-nuclear and environmental groups publicized misleading comparisons of derived water PAG concentrations alongside MCL concentrations to assert that the SDWA was being weakened. This is likely to happen again.
- Stakeholders base their strong objections and opposition on the fact that exposure to drinking water with higher levels of radiation could result in an increased risk of cancer cases. The stakeholders go into detail pointing out the differences in concentration levels derived from a PAG of 500 mrem in comparison with an MCL of 4 mrem. For some radionuclides, the resulting difference in concentration could be up to several thousand times.
- State radiation control programs, nuclear power plant response communities, and the American Water Works Association have asked EPA repeatedly for a drinking water PAG for emergencies. Comments submitted on our 2013 PAG Manual from many states, the AWWA, Health Physics Society, Nuclear Energy Institute and Conference of Radiation Control Program Directors specifically request a drinking water PAG.

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- Rollout and messaging: EPA is crafting key messages, a communications plan and will conduct a step-wise rollout for this proposal once it has gone through OMB review and is ready for the Federal Register. Interagency partners can serve as messengers on the value of this new guidance.

Proposed next steps in the timeline:

July 2015: Office of Policy review and facilitation

August 2015: Begin OMB 90-day review

Finalize edited FR Notice and drinking water PAG proposal **(OMB release + 14 days)**

Complete *Federal Register* Workflow for drinking water PAG proposal **(OMB release + 30 days)**

Public comment period **(OMB release + 90 days)**

Compile and adjudicate comments from public review **(OMB release + 120 days)**

Finalize entire PAG Manual including drinking water **(OMB release + 180 days ~ June 2016)**

ED_001057_00004576

From: Christ, Lisa
Location: @LC
Importance: Normal
Subject: radiation PAG
Start Date/Time: Thur 4/16/2015 1:00:00 PM
End Date/Time: Thur 4/16/2015 2:00:00 PM
Revised Version 4-14- Draft Chapter Drinking Water PAG V1.docx
Drinking Water PAG Q&A.docx
DRAFT Drinking Water PAG Communications Plan_4-15-2015.doc
PAG Action Memo Water 4-1-2015_J Ellis suggestions.docx

Jon Edwards called Eric to express concern about the schedule slipping. Let's discuss the revised chapter, comm materials and the schedule.

Protective Action Guide for Drinking Water after a Radiological Incident: Q&A

If the drinking water isn't safe for pregnant women and children, why is it safe for me?

How can there be such a large difference between guidance for a 15 year old and guidance for a 16 year old? What if my kid just turned 16?

Why is there a food PAG of 500 mrem and a drinking water PAG of 500 mrem?

A radiological event may result in contamination of food, water, or both and a strict delineation between the two ingestion routes may not be straightforward. For example, ground water is taken up into crops that ultimately enter the food supply and beverages such as coffee are made from drinking water. FDA and EPA PAGs and procedures have been developed independently but are complementary and can be adapted to apply to the specifics of a given situation. Due to inherent differences in how the food and water supplies are protected, the intervention/response levels for food and water differ.

Set in 1998, the FDA PAG is 5 mSv (0.5 rem) CEDE or 50 mSv (5 rem) committed dose equivalent to an individual tissue or organ, whichever is more limiting. In comparison, the EPA PAG, which uses newer dose terminology and definitions, is 5 mSv (0.5 rem) CEDE. Since FDA determines response actions according to the specifics of an event, it will decide whether the pre-set quantities are sufficient or new ones are needed. Thus, having a pre-set PAG defined according to previous Guidance does not restrict FDA. New calculations will include current health physics quantities.

The FDA DILs were developed with a primary focus on responding to contamination events affecting the food supply whereas the EPA DRLs were developed with a primary focus on responding to contamination events affecting the water supply. However, factors were included in both sets of derivations to compensate for the fact that an event could affect both supplies. This was accomplished for the FDA DILs by including a drinking water component in the calculations even though it is not regulated by FDA. Correspondingly, the EPA DRL calculations used a dietary water intake that was large enough to include water consumed via beverages and foods even though these are not regulated by EPA. This allows the DIL and DRL calculations to account for the possibility that some ingestion contamination could come from the alternate ingestion route.

The pre-set DILs and DRLs can be applied immediately in response to an event because the extra conservatism built into them accounts for the possibility of having at least some contamination spread between the two routes. However, emergency response procedures also call for a thorough evaluation of every event. Therefore, a determination will be made whether pre-set regulatory levels are appropriate or incident-specific levels need to be derived.

MEMORANDUM

SUBJECT: Addition to Protective Action Guides Manual for Radiological Incidents; Notice (Tier 4, SAN 5198) – **ACTION MEMORANDUM**

FROM: Ken Kopocis,
Acting Assistant Administrator, OW

Janet McCabe,
Assistant Administrator, OAR

TO: Stan Meiburg
Deputy Administrator

Attached for your signature is the *Federal Register* notice announcing availability of a proposed drinking water guidance for radiological emergencies (hereinafter referred to as drinking water PAG), which is a key addition to the Agency's revision of the Protective Action Guides and Planning Guidance for Radiological Incidents ("PAG Manual"). The purpose of the PAG Manual is to help federal, state, and local authorities make radiation protection decisions to protect the public during radiological emergencies. This *Federal Register* notice requests comments on the proposed drinking water PAG e, which was a key gap highlighted in the public comments on a revised PAG Manual that we published for public comment and interim use in 2013.

BACKGROUND

The PAG Manual provides federal, state, and local emergency management officials with guidance for responding to radiological emergencies. A protective action guide (PAG) is the projected dose to an individual from a release of radioactive material at which a specific protective action to reduce or avoid that dose is recommended. Emergency management officials use PAGs for making decisions regarding actions to protect the public from exposure to radiation during an emergency. Such actions include, but are not limited to, evacuation, shelter-in-place, temporary relocation, access restrictions and food embargos. The PAGs are not legally binding regulations or standards and do not supersede any environmental laws or regulations. They are not intended to define "safe" or "unsafe" levels of exposure or contamination. They define the projected radiation doses at which specific actions may be warranted in order to reduce or avoid that dose. The PAG Manual provides flexibility to be more or less restrictive as deemed appropriate by decision makers based on the unique characteristics of the incident and the local situation.

Development of PAGs are based on the following essential principles, which also apply to the selection of any protective action during an incident—

- prevent acute effects
- balance protection with other important factors and ensure that actions result in more benefit than harm
- reduce risk of chronic effects.

A drinking water PAG is the projected dose of radiation to an individual through consumption of drinking water at which a specific protective action—provide alternative drinking water—to reduce or avoid that dose is recommended.

- The primary pathway of concern for short-term exposure to water is drinking, not bathing or other uses.
- During emergencies, water systems could restrict the use of contaminated water for drinking purposes and provide alternative drinking water for the affected community.
- Options for providing alternate drinking water could include: bottled water, altering the source water (such as switching to ground water), interconnection between systems, or a combination of these actions.

The drinking water PAG consists of a two-tiered intermediate phase PAG of 100 mrem projected dose in the first year for infants, children and pregnant women and 500 mrem projected dose in the first year for the general population. The protective action is to restrict the use of contaminated water for drinking purposes and to provide alternative drinking water for the affected community. Options for providing alternate drinking water could include: bottled water, altering the raw water source of a water system, interconnection between systems, or a combination of these.

Under the Safe Drinking Water Act (SDWA), the Agency has established MCLs for radiological contaminants in drinking water. The National Primary Drinking Water Regulations (NPDWR) for radionuclides established a dose-based limit of 4 mrem/yr for beta particle and photon radioactivity; based on lifetime exposure criteria, which assume 70 years of continued exposure to contaminants in drinking water. The Agency determined that it is not appropriate to base response measures during short-term emergency incidents on lifetime exposure criteria. While the SDWA framework is appropriate for normal operations, it does not provide the necessary tools to assist emergency responders with determining the need for an immediate protective action. Regardless of the cause of an incident, EPA expects that any drinking water system impacted during a radiation incident will take action to return to compliance with the NPDWR levels as soon as practical.

REGULATORY HISTORY

The Administrator of EPA assumed all the functions of the Federal Radiation Council in 1970, including the charge to "…advise the President with respect to radiation matters, directly or indirectly affecting health, including guidance for all federal agencies in the formulation of radiation standards and in the establishment and execution of programs of cooperation with States." EPA's role in PAGs development was reaffirmed by FEMA regulations and the Nuclear/Radiological Incident Annex of the National Response Framework in June 2008.

IMPACTS

The drinking water PAG is not regulatory; however, it does influence regulations of the Federal

Emergency Management Agency and Nuclear Regulatory Commission regarding emergency preparedness near nuclear power plants and for homeland security. Specific statements in the document remind the users that the guidance is flexible, and that incident-specific conditions may warrant using judgment when taking protective actions. This proposed drinking water PAG does not modify existing Federal regulations or policies. The drinking water PAG relieves state, local, and tribal emergency preparedness entities of the need to independently derive radiation levels at which to take protective actions. The drinking water PAG provides a common platform from which emergency managers may make consistent decisions to protect public health; it raises no environmental justice issues because it applies to all members of the public equally.

The PAG Manual is for temporary measures in radiological emergencies and is not intended to impact site cleanups occurring under other statutory authorities such as EPA's Superfund program, the NRC's decommissioning program, or other federal or state cleanup programs.

This proposed addition of the drinking water PAG will make the revised PAG Manual more complete, covering all exposure pathways for impacts from a radiological emergency. Industry, state and professional organizations in radiation protection requested that this guidance be provided in comments on the 2013 PAG Manual revision and this proposal is responsive to their specific concerns.

STAKEHOLDER INVOLVEMENT

The primary users of the PAG Manual are state, local and tribal radiological preparedness organizations. A key audience for this proposed drinking water PAG is the drinking water industry. This proposal considers suggestions in comments received in 2013, and provides practical application strategies for emergency managers in state, local and tribal government organizations.

Document development and reviews have been conducted in close cooperation with the following departments and agencies on the PAGs Subcommittee of the Federal Radiological Preparedness Coordinating Committee (FRPCC): Department of Energy (DOE), the Department of Defense (DOD), the Department of Homeland Security (DHS) including the Federal Emergency Management Agency (FEMA), the Nuclear Regulatory Commission (NRC), the Department of Health and Human Services (HHS), including the Centers for Disease Control and Prevention (CDC) and the Food and Drug Administration (FDA), the Department of Agriculture (USDA), and the Department of Labor (DOL).

INTERNAL REVIEW

This is a Tier 4 action.

Within EPA, OSRTI (including the Environmental Response Team), OEM (including the Consequence Management Advisory Team), OW, OGC (ARLO and WLO) and OHS were briefed on this proposal and provided review. No major issues were identified and the reviewing offices agreed the document should be published for public review and comment.

OMB TRANSACTION

Because of interaction with other Department and Agency recommendations, OMB reviewed this proposal under EO 12866 & 13563. OMB clearance was received on _____.

PEER REVIEW

There were no major scientific or technical products supporting this action as defined by the Agency's Peer Review Handbook. We did not, therefore, submit any supporting documents for peer review.

PLAIN LANGUAGE

The *Federal Register* notice is directed at interested members of the public, so it is written in plain language. However, due to the technical nature of the Manual itself, the proposed drinking water PAG is written in the same tone as the 2013 PAG Manual.

ANTICIPATED EXTERNAL REACTION

We are anticipating a similar reaction to this proposal as what the Agency received on the 2013 revised PAG Manual. In general, the intended users of the Manual (including state, local, and tribal entities) were positive about the 2013 PAG Manual and will provide helpful suggestions for incorporation during this round of review. The drinking water industry will provide feedback on further implementation guidance needed for their plans. There is a sentiment among some environmental groups that the radiation levels provided in the guidance are not safe, or will in some way undermine environmental

regulations. Strategic messages have been included in our outreach materials as well as provided for the emergency managers who will implement the guidance in a real emergency.

STAFF CONTACT

The project lead is Sara DeCair, from the Office of Radiation and Indoor Air's Radiation Protection Division. She may be reached at (202) 343-9108.

RECOMMENDATION

Because of EPA's unique responsibility to provide PAGs and the need for consistent emergency preparedness across the United States in light of the Fukushima disaster, I recommend you sign the attached notice for publication.

Attachments

From: DeCair, Sara
Location: DCRoom1310L509p12PCPoly/DC-1310L-OAR
Importance: Normal
Subject: Water and Rad Emergencies
Start Date/Time: Wed 8/14/2013 7:20:00 PM
End Date/Time: Wed 8/14/2013 8:30:00 PM
DW Japan Briefing 3-30-2011.ppt

Join us at 1310 L Street, Room 509, and here is a briefing from back in Fukushima days to start from ---

Tue Nov 22 12:11:34 EST 2016
Leavy.Jacqueline@epamail.epa.gov
FW: For Ms. McCarthy's review: PAGs , radiation and EPA 900 Methods
To: CMS.OEX@epamail.epa.gov

From: Ex. 6 - Personal Privacy @aol.com [mailto: Ex. 6 - Personal Privacy @aol.com]
Sent: Tuesday, November 22, 2016 11:26 AM
To: Mccarthy, Gina <McCarthy.Gina@epa.gov>
Cc: Ridenour, Steve <Ridenour.Steve@epa.gov>; Anderson, RobinM <Anderson.RobinM@epa.gov>; Walker, Stuart <Walker.Stuart@epa.gov>; Schuver, Henry <Schuver.Henry@epa.gov>; lennysiegel@gmail.com; Marc Edwards <edwardsm@vt.edu>; ccwits@sbcglobal.net; mjroll@sbcglobal.net; chuckosborne@neo.rr.com; damsel16@aol.com; GColeridge@afsc.org; greg.m.schwartz@gmail.com; dianed@nirs.org; danny@350.org; danni@pogo.org; judibrightwell@gmail.com; tammyproctor@hotmail.com; scribman33@yahoo.com; rachel@ecobooks.com; ann@freshwaterfuture.org; jrichards13@neo.rr.com; grapevinerealestate@roadrunner.com; EdJulieR@aol.com; joreilly@fuse.net; ceh65471@windstream.net; hughes@ovis.net; fight848@gmail.com; glassart@fortyfrogfarm.com
Subject: Fwd: For Ms. McCarthy's review: PAGs , radiation and EPA 900 Methods

-----Original Message-----
From: crborello Ex. 6 - Personal Privacy @aol.com>
To: crborello Ex. 6 - Personal Privacy @aol.com>
Sent: Tue, Nov 22, 2016 11:09 am
Subject: For Ms. McCarthy's review: PAGs , radiation and EPA 900 Methods

Subject: **PAGs & US EPA Finished Drinking Water 900 Method being used on raw untreated water suspected of containing radiation**

US EPA Aministrator Gina McCarthy

Washington D.C.

Dear Ms. McCarthy,

Please kindly review the below comments. ***They are based primarily upon your agency's own former top radiation experts and other top US government radiation experts I have consulted with over the decades.***

In approx. 2003, deeply concerned technical experts within your agency had personally warned me about the**PAGs** being proposed even back then. I strongly believe they shared this with me because they were already acutely aware of the deeply troubling situation regarding radiation and testing at our Uniontown IEL Superfund site in Ohio. In this same time frame in the mid 2000s, after reviewing the US EPA's/corporations' data base on IEL, top independent university radiation experts indeed estimated the IEL toxic landfill may contain up **to 1/2 ton of deadly Plutonium and other dangerous radiation** isotopes, but may have been underestimated given outdated, questionable methods permitted by US EPA's NAREL. However, apparently due to the perceived severe politics/pressures involved, and thanks to US Region 5 bowing to the corporations' wishes, even the most basic clean up of mere institutional controls were killed off that your agency*had promised the community would be implemented to help mitigate the outward migration of toxins by isolating the hundreds of tons of waste perched just a few feet above the water table linked to the area's sole source aquifer system serving up to 600,000 Ohioans in several counties. Instead this Superfund Site continues to freely flush to this day..*

Ms. McCarthy, I believe that those same US EPA experts **who had long ago shared their worries about the PAGs being implemented all too well understood the "gaming" of the rad testing that had already been going on for years. .... - i.e, so called "compliance monitoring**" - using the US EPA "Finished Drinking Water 900 Methods" - methods meant for finished, treated water systems and they said was never meant to be used on raw, untreated water sources found like at IEL. Please see numerous letters documenting these serious deviations away from what is considered to be best available science in letters to EPA found on our group's website: http://cclt.starksummit.org

Thus, the EPA scientists not simply expressed their fears of the PAGs being misused leaving Americans at risk to dangerous radiation, *but they likewise raised serious concerns to me about the US EPA's unscientific usage of the "EPA Finished Drinking Water 900 Methods" on raw, untreated water sources suspected of containing radiation, which is what occurred at Uniontown IEL.*

Therefore, I am writing you today to not only ask that you NOT sign off on the PAGs , but to please issue a change in policy immediately, before this Administration ceases, to once and for all prohibit the US EPA from allowing/prescribing/condoning the continued usage of the EPA Finished Drinking Water 900 Methods whenever raw, untreated water suspected of containing radiation is involved.

Important note**: While those same EPA whistle blowers had thought by 2000 they had at least stopped this practice of using the 900 on raw, untreated water after this was erroneously done to the Uniontown IEL Superfund Site, we have outrageously come to learn in recent years in working on fracking issues that US EPA continues to apparently suggest/permit others consulting the EPA to use the Finished Drinking Water 900 Methods on raw fracking waste water, despite the scientific evidence going against this being allowed, if in fact, there is a desire to learn the true amounts of water soluble radium 226 present **in the fracking wastes**. Experts consulted over the years advised me that they believed that while most people know that Plutonium is deadly, many do not understand that given the way **the water soluble radium**can be metabolized = bone seeking, even more in the body than Plutonium, which is somewhat excreted, **It is essential that EPA take these steps immediately to insure credible data is gathered given the vast amounts of fracking wastes being discharged daily into our US communities in Ohio, PA., W. Virginia, New York and elsewhere, or many more IEL landfills will occur.

Sincerely,

Chris Borello, President , Concerned Citizens of Lake Twp.

Uniontown IEL Superfund Site, Ohio

Re:

-----Original Message-----
From: Diane D'Arrigo - NIRS <nirs@nirs.org>
To: crborello <crborello@aol.com>
Sent: Mon, Nov 21, 2016 7:23 pm
Subject: Tell EPA - Stop Dangerous Radioactive Drinking Water!

NUCLEAR INFORMATION AND RESOURCE SERVICE • 6930 Carroll Ave., Ste. 340 • Takoma Park, MD, 20912 • (301) 270-6477 • www.nirs.org

November 21, 2016
Dear Friend,
In July, thousands of us took action to stop dangerous new radiation guidance for drinking water. The EPA refused to listen, and now this guidance could be approved anytime--unless we act now!
Environmental Protection Agency (EPA) Administrator Gina McCarthy is on the verge of approving radiation levels hundreds and thousands of times higher than currently allowed in drinking water and at cleaned-up Superfund sites. These mis-named "Protective" Action Guides for Drinking Water (Water PAGs) dramatically INCREASE allowable radioactivity in water. Enormous levels of invisible but deadly radioactive contamination would be permitted in drinking water for weeks, months or even years after a nuclear accident or "incident." The PAGs *are not* for the immediate phase after a radioactive release but *the next phase*--which could last for years--when local residents may return home to contaminated water and not know the danger.
Take action now: Protect drinking water from dangerous radiation levels!
There are two quick actions to take today:

1. **Tell your EPA Regional Administrator (see map and list below)** to ask EPA Administrator Gina McCarthy why she is raising radiation levels allowed in drinking water.
2. **Send a message to Administrator McCarthy** yourself asking her not to approve these dangerous radiation levels in drinking water.

We have stopped PAGs like these from being approved before--and we can do it again. EPA insiders attempted to push these dangerous guides through in the waning days of the Bush administration, and public pressure like this got the

To: Christ, Lisa[Christ.Lisa@epa.gov]
From: Hernandez-Quinones, Samuel
Sent: Wed 1/11/2017 9:24:22 PM
Subject: Draft Response Letter
Response Ltr Mr Vasile.docx

Attached.

Sam

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water

Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

To: Christ, Lisa[Christ.Lisa@epa.gov]; Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]
From: Flaharty, Stephanie
Sent: Wed 1/11/2017 4:25:16 PM
Subject: PAG final docs/markups (attached)
PAG FRN final_V2.docx
PAG FRN - compare mark-up with final FRN.docx
EPA Final Drinking Water PAG.docx
PAG - compare mark-up with final.docx

Lisa / Sam,

Joel signed the PAG FRN and I've delivered it to OP/FR Liaison.

Attached is the final FRN and PAG guidance. I've also attached markups so you can see the changes that I made.

Steph

ENVIRONMENTAL PROTECTION AGENCY

[EPA-HQ-OAR-2007-0268; FRL -]

Revision to the PAG Manual: Protective Action Guide (PAG) for Drinking Water after a Radiological Incident

AGENCY: Environmental Protection Agency (EPA).

ACTION: Notice of availability.

SUMMARY: As part of its mission to protect human health and the environment, the U.S. Environmental Protection Agency publishes protective action guides (PAGs) to help federal, state, local and tribal emergency response officials make radiation protection decisions during emergencies. EPA, in coordination with a multi-agency working group within the Federal Radiological Preparedness Coordinating Committee, recently updated its guidance manual on this topic, titled "Protective Action Guides and Planning Guidance for Radiological Incidents" (referred to herein as the PAG Manual). On December 8, 2016, EPA announced availability of the updated 2016 PAG Manual

in the Federal Register. In this notice, EPA is announcing that it has amended Chapter 4 of the 2016 PAG Manual to incorporate guidance for radiation protection decisions concerning drinking water. The drinking water PAG is not binding and does not in any way affect regulatory requirements or enforcement of the Safe Drinking Water Act (SDWA), including maximum contaminant limits (MCLs) for radionuclides established by regulation under the SDWA. The drinking water PAG is guidance only and is intended for use by federal, state and local

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emergency management officials in the unlikely event of significant radiological contamination incidents, such as a disaster at a nuclear power plant, a radiological dispersal device or an improvised nuclear device, and for a duration which may last for weeks to months but not longer than one year. The dose levels reflected in the drinking water PAG provide a level of protection against cancer risks for a short-term (weeks to months but not longer than a year), similar to that provided by EPA's MCLs for radionuclides (which are calculated based on 70 years of exposure).

DATES: The revised drinking water PAG is available for use upon publication of this notice in the Federal Register, at www.regulations.gov, under ID No. EPA-HQ-OAR-2007-0268.

FOR FURTHER INFORMATION CONTACT: Samuel Hernandez, Standards and Risk Management Division, Office of Ground Water and Drinking Water, Mail Code 4607M, U.S. Environmental Protection Agency, 1200 Pennsylvania Avenue NW, Washington, DC 20460; telephone number: (202) 564-1735; email: hernandez.samuel@epa.gov.

SUPPLEMENTARY INFORMATION:

A. How can I get copies of the PAG Manual and supporting information?

Docket: EPA has established a docket for this action under Docket ID No. EPA-HQ-OAR-2007-0268. Publicly available docket materials are available either electronically through www.regulations.gov or in hard copy at the Air and Radiation Docket in the EPA Docket Center, (EPA/DC) EPA West, Room 3334, 1301 Constitution Ave., NW, Washington, DC 20004. The Docket Facility is open from 8:30 a.m. to 4:30 p.m., Monday through Friday, excluding legal holidays. The telephone number for the Docket's Public Reading Room is (202) 566-1744 and the telephone number for the Air and Radiation Docket is (202) 566-1742. In accordance with

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normal EPA docket procedures, if copies of any docket materials are requested, a reasonable fee may be charged for photocopying.

Electronic access: The PAG Manual in electronic form suitable for printing, as well as related guidelines and further information, can be found on the PAGs' website at http://www.epa.gov/radiation/protective-action-guides-pags.

B. What authority does EPA have to provide Protective Action Guidance?

The historical and legal basis of EPA's role in the PAG Manual begins with the Reorganization Plan No. 3 of 1970, in which the Administrator of the EPA assumed all the functions of the Federal Radiation Council (FRC), including the charge to "…advise the President with respect to radiation matters, directly or indirectly affecting health, including guidance for all federal agencies in the formulation of radiation standards and in the establishment and execution of programs of cooperation with [s]tates." (Reorg. Plan No. 3 of 1970, sec. 2(a) (7), 6(a) (2); § 274.h of the Atomic Energy Act of 1954, as amended (AEA), codified at 42 U.S.C. 2021(h)). Recognizing this role, the Federal Emergency Management Agency (FEMA) directed EPA, in its Radiological Emergency Planning and Preparedness Regulations, to "establish Protective Action Guides (PAGs) for all aspects of radiological emergency planning in coordination with appropriate federal agencies." (44 CFR 351.22(a)). FEMA also tasked EPA with preparing "guidance for state and local governments on implementing PAGs, including recommendations on protective actions which can be taken to mitigate the potential radiation dose to the population." (44 CFR 351.22(b)). All of this information was to "be presented in the Environmental Protection Agency (EPA) 'Manual of Protective Action Guides and Protective Actions for Nuclear Incidents.'" (44 CFR 351.22(b)).

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Additionally, section 2021(h) charged the Administrator with performing "such other functions as the President may assign to him [or her] by Executive Order." Executive Order 12656 states that the Administrator shall "[d]evelop, for national security emergencies, guidance on acceptable emergency levels of nuclear radiation…." (Executive Order No. 12656, sec. 1601(2)). EPA's role in PAGs development was recognized by the National Response Framework, Nuclear/Radiological Incident Annex of June 2008.

C. What is the PAG Manual: Protective Action Guides and Planning Guidance for Radiological Incidents?

The PAG Manual provides federal, state and local emergency management officials with guidance for responding to radiological emergencies. A protective action guide is the projected dose to an individual from a release of radioactive material at which a specific protective action to reduce or avoid that dose is recommended. Emergency management officials use PAGs for making decisions regarding actions to protect the public from exposure to radiation during an emergency. Such actions include, but are not limited to, evacuation, shelter-in-place, temporary relocation and food restrictions.

Development of the PAGs was based on the following essential principles, which also apply to the selection of any protective action during an incident:

- Prevent acute effects.
- Balance protection with other important factors and ensure that actions result in more benefit than harm.
- Reduce risk of chronic effects.

The PAG Manual is not a legally binding regulation or standard and does not supersede any environmental laws. This guidance does not address or impact site cleanups occurring under

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other statutory authorities such as the EPA's Superfund program, the Nuclear Regulatory Commission's (NRC) decommissioning program, or other federal or state cleanup programs. As indicated by the use of non-mandatory language such as "may," "should" and "can," the PAG Manual only provides recommendations and does not confer any legal rights or impose any legally binding requirements upon any member of the public, states or any other federal agency. Rather, the PAG Manual recommends projected radiation doses at which specific actions may be warranted in order to reduce or avoid that dose. The PAG Manual is designed to provide flexibility to be more or less restrictive as deemed appropriate by decision makers based on the unique characteristics of the incident and the local situation.

D. How did EPA respond to public comments on the proposed Draft Protective Action Guide for Drinking Water?

PAGs do not represent "acceptable" routine exposure in the way that regulatory standards such as maximum contaminant levels do. PAGs are guidance levels to support emergency decision making by response authorities to avoid unnecessary radiation exposure. Development and implementation of PAGs is always guided by three basic principles: Prevent acute effects, balance protection with other important factors and ensure that actions result in more benefit than harm, and reduce risk of chronic effects.

On June 10, 2016, EPA published a Federal Register notice requesting public comments on the proposed drinking water PAG and the guidance for advance planning (81 FR 37589). EPA sought specific comments and feedback on the appropriateness of the drinking water PAG and possible implementation challenges associated with the two-tiered approach. In addition, EPA asked whether a single-tier drinking water PAG should be considered rather than using the tiered approach.

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In response, EPA received over 60,000 comment letters from members of the public, state and local emergency response and health organizations, environmental advocates, industry associations and other stakeholders. Most of the comment letters expressed concerns with the proposed guidance. Commenters wrote that the proposed guidance could weaken the regulatory requirements of the Safe Drinking Water Act. In addition, environmental advocacy organizations indicated that the drinking water PAG dose levels were too high and insufficient to be protective of human health, and asked EPA to withdraw the proposed guidance and, in its place, use the National Primary Drinking Water Regulations for Radionuclides as the basis for any emergency response measures regarding drinking water.

Commenters also asserted that the proposed drinking water PAG did not conform to the National Environmental Policy Act (NEPA) as well as other regulations dealing with cleanup and waste management of radioactive contaminants. Commenters expressed doubts regarding the duration that the drinking water PAG would be implemented after an incident, claiming that the drinking water PAG could be in place for timeframes exceeding one year.

In response to comments, EPA has amended the drinking water guidance to emphasize, with regards to the scope of the drinking water PAG recommendations, that they are only intended to apply to nationally significant radiological contamination incidents, such as a disaster at a nuclear power plant, a radiological dispersal device or an improvised nuclear device, and for a duration that may last for weeks to months but not longer than one year.

Some commenters expressed concerns that PAGs would weaken drinking water standards and regulations. Environmental regulations or standards are legal limits designed to minimize health effects from everyday exposure to low levels of radiation over long periods. The PAG levels are guidance for emergency situations; they do not supplant any standards or regulations,

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nor do they affect the stringency or enforcement of any standards or regulations. The PAG levels are intended to be used only in an emergency when radiation levels have already exceeded environmental standards. The PAG levels trigger public safety measures to minimize radiation exposures during an emergency.

To develop guidance on drinking water considerations, EPA based its assessment on assumptions limiting exposures to a one-year timeframe. EPA expects that the responsible party for any drinking water system adversely impacted during a radiation incident will take action to return to compliance with Safe Drinking Water Act levels as soon as practicable.

The National Primary Drinking Water Regulations establish regulatory limits designed to minimize health effects from everyday exposure to low levels of radiation over long periods; those limits are not changing with this action. Emergency guides are temporary measures to minimize risk while enabling distribution of limited resources during an emergency response.

Estimated risk of excess cancer cases for lifetime exposure (70 years) to beta emitting radioactive contaminants in drinking water at 4 mrem/yr (the MCL) generally falls in a range of risks deemed acceptable by EPA. Estimated risks associated for a shorter (one-year) exposure to radioactivity in drinking water at the proposed PAG levels fall within a similar risk range.

The drinking water PAG meets NEPA policy goals because it is based on analyses, documentation and review procedures that are functionally equivalent to NEPA. "Activities for the development of federal radiation regulations and guidance in accordance with the Atomic Energy Act of 1954 are functionally equivalent to NEPA" (63 Fed. Reg. 58045, October 29, 1998).

Commenters questioned whether the EPA considered cumulative effects in developing the drinking water PAG. In developing the PAG Manual, EPA considered the potential for

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cumulative exposure from multiple exposure pathways including: plume inhalation, immersion, ground shine, drinking water ingestions and food, among others. However, EPA has determined that for implementation purposes, it is impractical to compartmentalize joint protective actions, since allocations of dose to different segments of the population based on individual exposure routes will depend on site-specific circumstances and are impossible to quantify. While the PAGs for the various pathways are separate, emergency management officials should consider all relevant exposure routes when making protective action decisions in an emergency. In addition, incident-specific factors like geographical location, ongoing weather, the isotopes released and population affected should be considered after a contamination event, and specific exposure routes should be identified to allow different types of protective actions to be aimed at the specific risks to be avoided.

Several commenters from state emergency management agencies and radiation control programs expressed support for EPA's proposal, stating that the guidance was well developed and technically sound; and that the incorporation of the drinking water PAG into the PAG Manual is a critical aspect of a coordinated emergency response after a radiation contamination incident.

Some commenters suggested that while they support the incorporation of the drinking water PAG, they believe the proposed PAG was too conservative and that EPA should consider establishing the PAG in the 2,000 to 10,000 mrem range.

EPA believes that the drinking water PAG should be consistent with and within the range of currently available guidance for other exposure pathways during the intermediate phase. Also, when possible, the drinking water PAG recommendations should be based on an additional level of protection to sensitive life-stages. For short-term incidents, as explained in the PAG Manual,

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it is appropriate to have a 500 mrem PAG level for drinking water for the general population and a lower-tier PAG level of 100 mrem for persons at sensitive life-stages, including pregnant women, nursing women, and children 15 years old and under. This approach of setting a two-tier level of protection incorporates suggestions submitted by commenters regarding the adequate consideration of children and sensitive subpopulations.

There is an abundance of caution built into the derivation of the drinking water PAG through a variety of assumptions, including conservative dose-response modeling; selection of the most sensitive life stages to derive the PAG for children through age 15 years; and, the assumption of no decay of isotopes over the calculated one-year exposure period, which may be appropriate in some situations. This action ensures that the protective measures it recommends are appropriate for all members of the public, including sensitive subpopulations.

E. What is the timeframe for implementation of this PAG Manual?

Emergency management and radiation protection organizations that use the PAGs in their emergency plans are encouraged to incorporate this updated guidance as soon as possible. This may entail training, as well as the update of plans and procedures. Outreach and technical training will be conducted by EPA, the Federal Radiological Monitoring and Assessment Center and interagency partners of the PAG Subcommittee. FEMA expects certain organizations associated with nuclear power plant operations to use the PAG Manual in developing their emergency management plans. FEMA plans to begin using the new PAG Manual during their evaluation of offsite response organizations around nuclear power facilities 12 months after the publication of this notice in the Federal Register.

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[Revision to the PAG Manual: Protective Action Guide (PAG) for Drinking Water after a Radiological Incident; notice of availability, page 10 of 10]

For further information and related guidelines, see the EPA website: http://www.epa.gov/radiation/protective-action-guides-pags. Keywords include: drinking water, radiation, radiological incident, emergency and protective action guide.

Dated: January 10, 2017.

Joel Beauvais,
Deputy Assistant Administrator,
Office of Water.

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ENVIRONMENTAL PROTECTION AGENCY

[EPA-HQ-OAR-2007-0268; FRL -]

Revision to the PAG Manual: Protective Action Guide (PAG) for Drinking Water after a Radiological Incident

AGENCY: Environmental Protection Agency (EPA).

ACTION: Notice of availability.

SUMMARY: As part of its mission to protect human health and the environment, the U.S. Environmental Protection Agency publishes protective action guides (PAGs) to help federal, state, local and tribal emergency response officials make radiation protection decisions during emergencies. EPA, in coordination with a multi-agency working group within the Federal Radiological Preparedness Coordinating Committee, recently updated its guidance manual on this topic, titled "Protective Action Guides and Planning Guidance for Radiological Incidents" (referred to herein as the PAG Manual). On December 8, 2016, EPA announced availability of the updated 2016 PAG Manual in the Federal Register. In this notice, EPA is announcing that it has amended Chapter 4 of the 2016 PAG Manual to incorporate guidance for radiation protection decisions concerning drinking water. The drinking water PAG is not binding and does not in any way affect regulatory requirements or enforcement of the Safe Drinking Water Act (SDWA), including maximum contaminant limits (MCLs) for radionuclides established by regulation under the SDWA. The drinking water PAG is guidance only and is intended for use by federal, state and local emergency management officials in the unlikely event of significant radiological

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contamination incidents, such as a disaster at a nuclear power plant, a radiological dispersal device or an improvised nuclear device, and for a duration which may last for weeks to months but not longer than one year. The dose levels reflected in the drinking water PAG provide a level of protection against cancer risks for a short-term (weeks to months but not longer than a year), similar to that provided by EPA's MCLs for radionuclides (which are calculated based on 70 years of exposure).

DATES: The revised drinking water PAG is available for use upon publication of this notice in the Federal Register, at www.regulations.gov, under ID No. EPA-HQ-OAR-2007-0268.

FOR FURTHER INFORMATION CONTACT: Samuel Hernandez, Standards and Risk Management Division, Office of Ground Water and Drinking Water, Mail Code 4607M, U.S. Environmental Protection Agency, 1200 Pennsylvania Avenue NW, Washington, DC 20460; telephone number: (202) 564-1735; email: hernandez.samuel@epa.gov.

SUPPLEMENTARY INFORMATION:

A. How can I get copies of the PAG Manual and supporting information?

Docket: EPA has established a docket for this action under Docket ID No. EPA-HQ-OAR-2007-0268. Publicly available docket materials are available either electronically through www.regulations.gov or in hard copy at the Air and Radiation Docket in the EPA Docket Center, (EPA/DC) EPA West, Room 3334, 1301 Constitution Ave., NW, Washington, DC 20004. The Docket Facility is open from 8:30 a.m. to 4:30 p.m., Monday through Friday, excluding legal holidays. The telephone number for the Docket's Public Reading Room is (202) 566-1744 and the telephone number for the Air and Radiation Docket is (202) 566-1742. In accordance with normal EPA docket procedures, if copies of any docket materials are requested, a reasonable fee may be charged for photocopying.

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Electronic access: The PAG Manual in electronic form suitable for printing, as well as related guidelines and further information, can be found on the PAGs' website at http://www.epa.gov/radiation/protective-action-guides-pags.

B. What authority does EPA have to provide Protective Action Guidance?

The historical and legal basis of EPA's role in the PAG Manual begins with the Reorganization Plan No. 3 of 1970, in which the Administrator of the EPA assumed all the functions of the Federal Radiation Council (FRC), including the charge to "…advise the President with respect to radiation matters, directly or indirectly affecting health, including guidance for all federal agencies in the formulation of radiation standards and in the establishment and execution of programs of cooperation with [s]tates." (Reorg. Plan No. 3 of 1970, sec. 2(a) (7), 6(a) (2); § 274.h of the Atomic Energy Act of 1954, as amended (AEA), codified at 42 U.S.C. 2021(h)). Recognizing this role, the Federal Emergency Management Agency (FEMA) directed EPA, in its Radiological Emergency Planning and Preparedness Regulations, to "establish Protective Action Guides (PAGs) for all aspects of radiological emergency planning in coordination with appropriate federal agencies." (44 CFR 351.22(a)). FEMA also tasked EPA with preparing "guidance for state and local governments on implementing PAGs, including recommendations on protective actions which can be taken to mitigate the potential radiation dose to the population." (44 CFR 351.22(b)). All of this information was to "be presented in the Environmental Protection Agency (EPA) 'Manual of Protective Action Guides and Protective Actions for Nuclear Incidents.'" (44 CFR 351.22(b)).

Additionally, section 2021(h) charged the Administrator with performing "such other functions as the President may assign to him [or her] by Executive Order." Executive Order 12656 states that the Administrator shall "[d]evelop, for national security emergencies, guidance

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on acceptable emergency levels of nuclear radiation…." (Executive Order No. 12656, sec. 1601(2)). EPA's role in PAGs development was recognized by the National Response Framework, Nuclear/Radiological Incident Annex of June 2008.

C. What is the PAG Manual: Protective Action Guides and Planning Guidance for Radiological Incidents?

The PAG Manual provides federal, state and local emergency management officials with guidance for responding to radiological emergencies. A protective action guide is the projected dose to an individual from a release of radioactive material at which a specific protective action to reduce or avoid that dose is recommended. Emergency management officials use PAGs for making decisions regarding actions to protect the public from exposure to radiation during an emergency. Such actions include, but are not limited to, evacuation, shelter-in-place, temporary relocation and food restrictions.

Development of the PAGs was based on the following essential principles, which also apply to the selection of any protective action during an incident:

- Prevent acute effects.
- Balance protection with other important factors and ensure that actions result in more benefit than harm.
- Reduce risk of chronic effects.

The PAG Manual is not a legally binding regulation or standard and does not supersede any environmental laws. This guidance does not address or impact site cleanups occurring under other statutory authorities such as the EPA's Superfund program, the Nuclear Regulatory Commission's (NRC) decommissioning program, or other federal or state cleanup programs. As indicated by the use of non-mandatory language such as "may," "should" and "can," the PAG

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Manual only provides recommendations and does not confer any legal rights or impose any legally binding requirements upon any member of the public, states or any other federal agency. Rather, the PAG Manual recommends projected radiation doses at which specific actions may be warranted in order to reduce or avoid that dose. The PAG Manual is designed to provide flexibility to be more or less restrictive as deemed appropriate by decision makers based on the unique characteristics of the incident and the local situation.

D. How did EPA respond to public comments on the proposed Draft Protective Action Guide for Drinking Water?

PAGs do not represent "acceptable" routine exposure in the way that regulatory standards such as maximum contaminant levels do. PAGs are guidance levels to support emergency decision making by response authorities to avoid unnecessary radiation exposure. Development and implementation of PAGs is always guided by three basic principles: Prevent acute effects, balance protection with other important factors and ensure that actions result in more benefit than harm, and reduce risk of chronic effects.

On June 10, 2016, EPA published a Federal Register notice requesting public comments on the proposed drinking water PAG and the guidance for advance planning (81 FR 37589). EPA sought specific comments and feedback on the appropriateness of the drinking water PAG and possible implementation challenges associated with the two-tiered approach. In addition, EPA asked whether a single-tier drinking water PAG should be considered rather than using the tiered approach.

In response, EPA received over 60,000 comment letters from members of the public, state and local emergency response and health organizations, environmental advocates, industry associations and other stakeholders. Most of the comment letters expressed concerns with the

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proposed guidance. Commenters wrote that the proposed guidance could weaken the regulatory requirements of the Safe Drinking Water Act. In addition, environmental advocacy organizations indicated that the drinking water PAG dose levels were too high and insufficient to be protective of human health, and asked EPA to withdraw the proposed guidance and, in its place, use the National Primary Drinking Water Regulations for Radionuclides as the basis for any emergency response measures regarding drinking water.

Commenters also asserted that the proposed drinking water PAG did not conform to the National Environmental Policy Act (NEPA) as well as other regulations dealing with cleanup and waste management of radioactive contaminants. Commenters expressed doubts regarding the duration that the drinking water PAG would be implemented after an incident, claiming that the drinking water PAG could be in place for timeframes exceeding one year.

In response to comments, EPA has amended the drinking water guidance to emphasize, with regards to the scope of the drinking water PAG recommendations, that they are only intended to apply to nationally significant radiological contamination incidents, such as a disaster at a nuclear power plant, a radiological dispersal device or an improvised nuclear device, and for a duration that may last for weeks to months but not longer than one year.

Some commenters expressed concerns that PAGs would weaken drinking water standards and regulations. Environmental regulations or standards are legal limits designed to minimize health effects from everyday exposure to low levels of radiation over long periods. The PAG levels are guidance for emergency situations; they do not supplant any standards or regulations, nor do they affect the stringency or enforcement of any standards or regulations. The PAG levels are intended to be used only in an emergency when radiation levels have already exceeded environmental standards. The PAG levels trigger public safety measures to minimize radiation

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exposures during an emergency.

To develop guidance on drinking water considerations, EPA based its assessment on assumptions limiting exposures to a one-year timeframe. EPA expects that the responsible party for any drinking water system adversely impacted during a radiation incident will take action to return to compliance with Safe Drinking Water Act levels as soon as practicable.

The National Primary Drinking Water Regulations establish regulatory limits designed to minimize health effects from everyday exposure to low levels of radiation over long periods; those limits are not changing with this action. Emergency guides are temporary measures to minimize risk while enabling distribution of limited resources during an emergency response.

Estimated risk of excess cancer cases for lifetime exposure (70 years) to beta emitting radioactive contaminants in drinking water at 4 mrem/yr (the MCL) generally falls in a range of risks deemed acceptable by EPA. Estimated risks associated for a shorter (one-year) exposure to radioactivity in drinking water at the proposed PAG levels fall within a similar risk range.

The drinking water PAG meets NEPA policy goals because it is based on analyses, documentation and review procedures that are functionally equivalent to NEPA. "Activities for the development of federal radiation regulations and guidance in accordance with the Atomic Energy Act of 1954 are functionally equivalent to NEPA" (63 Fed. Reg. 58045, October 29, 1998).

Commenters questioned whether the EPA considered cumulative effects in developing the drinking water PAG. In developing the PAG Manual, EPA considered the potential for cumulative exposure from multiple exposure pathways including: plume inhalation, immersion, ground shine, drinking water ingestions and food, among others. However, EPA has determined that for implementation purposes, it is impractical to compartmentalize joint protective actions,

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since allocations of dose to different segments of the population based on individual exposure routes will depend on site-specific circumstances and are impossible to quantify. While the PAGs for the various pathways are separate, emergency management officials should consider all relevant exposure routes when making protective action decisions in an emergency. In addition, incident-specific factors like geographical location, ongoing weather, the isotopes released and population affected should be considered after a contamination event, and specific exposure routes should be identified to allow different types of protective actions to be aimed at the specific risks to be avoided.

Several commenters from state emergency management agencies and radiation control programs expressed support for EPA's proposal, stating that the guidance was well developed and technically sound; and that the incorporation of the drinking water PAG into the PAG Manual is a critical aspect of a coordinated emergency response after a radiation contamination incident.

Some commenters suggested that while they support the incorporation of the drinking water PAG, they believe the proposed PAG was too conservative and that EPA should consider establishing the PAG in the 2,000 to 10,000 mrem range.

EPA believes that the drinking water PAG should be consistent with and within the range of currently available guidance for other exposure pathways during the intermediate phase. Also, when possible, the drinking water PAG recommendations should be based on an additional level of protection to sensitive life-stages. For short-term incidents, as explained in the PAG Manual, it is appropriate to have a 500 mrem PAG level for drinking water for the general population and a lower-tier PAG level of 100 mrem for persons at sensitive life-stages, including pregnant women, nursing women, and children 15 years old and under. This approach of setting a two-tier

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level of protection incorporates suggestions submitted by commenters regarding the adequate consideration of children and sensitive subpopulations.

There is an abundance of caution built into the derivation of the drinking water PAG through a variety of assumptions, including conservative dose-response modeling; selection of the most sensitive life stages to derive the PAG for children through age 15 years; and, the assumption of no decay of isotopes over the calculated one-year exposure period, which may be appropriate in some situations. This action ensures that the protective measures it recommends are appropriate for all members of the public, including sensitive subpopulations.

E. What is the timeframe for implementation of this PAG Manual?

Emergency management and radiation protection organizations that use the PAGs in their emergency plans are encouraged to incorporate this updated guidance as soon as possible. This may entail training, as well as the update of plans and procedures. Outreach and technical training will be conducted by EPA, the Federal Radiological Monitoring and Assessment Center and interagency partners of the PAG Subcommittee. FEMA expects certain organizations associated with nuclear power plant operations to use the PAG Manual in developing their emergency management plans. FEMA plans to begin using the new PAG Manual during their evaluation of offsite response organizations around nuclear power facilities 12 months after the publication of this notice in the Federal Register.

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For further information and related guidelines, see the EPA website: http://www.epa.gov/radiation/protective-action-guides-pags. Keywords include: drinking water, radiation, radiological incident, emergency and protective action guide.

Dated: January 10, 2017.

Joel Beauvais,
Deputy Assistant Administrator,
Office of Water.

ED_001057_00004656

To: Albert, Ryan[Albert.Ryan@epa.gov]; Albright, David[Albright.David@epa.gov]; Allenbach, Becky[Allenbach.Becky@epa.gov]; Anderson, Arlene[Anderson.Arlene@epa.gov]; Bahrman, Sarah[Bahrman.Sarah@epa.gov]; Bair, Rita[bair.rita@epa.gov]; Behl, Betsy[Behl.Betsy@epa.gov]; Bennett, James[bennett.james@epa.gov]; Bergman, Ronald[Bergman.Ronald@epa.gov]; Bissonette, Eric[Bissonette.Eric@epa.gov]; Bloom, Judy[Bloom.Judy@epa.gov]; Brandt, Peter[Brandt.Peter@epa.gov]; Brown, Jamesr[brown.jamesr@epa.gov]; Burneson, Eric[Burneson.Eric@epa.gov]; Campbell, Gwen[Campbell.Gwen@epa.gov]; Campbell-Dunbar, Shawneille[Campbell-Dunbar.Shawneille@epa.gov]; Carroll, Gregory[Carroll.Gregory@epa.gov]; Christ, Lisa[Christ.Lisa@epa.gov]; Copeland, Michael[Copeland.Michael@epa.gov]; Corr, Elizabeth[Corr.Elizabeth@epa.gov]; Crumlish, Karen[Crumlish.Karen@epa.gov]; Davis, CatherineM[Davis.CatherineM@epa.gov]; Deason, Ken[Deason.Ken@epa.gov]; Downing, Jane[Downing.Jane@epa.gov]; Dwyer, Stacey[Dwyer.Stacey@epa.gov]; Fort, Felecia[Fort.Felecia@epa.gov]; Gilleland, Lynn[Gilleland.Lynn@epa.gov]; Gonzalez, Yvonne V.[Gonzalez.Yvonne@epa.gov]; Green, Holly[Green.Holly@epa.gov]; Greene, Ashley[Greene.Ashley@epa.gov]; Harper, Ashley[harper.ashley@epa.gov]; Harris, Adrienne[Harris.Adrienne@epa.gov]; Hautman, Dan[Hautman.Dan@epa.gov]; Huff, Lisa[Huff.Lisa@epa.gov]; Hutchinson, Marcella[Hutchinson.Marcella@epa.gov]; Jennings, Marie[Jennings.Marie@epa.gov]; Johnson, KarenD[Johnson.KarenD@epa.gov]; Kahn, Lisa[Kahn.Lisa@epa.gov]; Kraft, Nicole[Kraft.Nicole@epa.gov]; Lalley, Cara[Lalley.Cara@epa.gov]; Li, Corine[Li.Corine@epa.gov]; Lopez-Carbo, Maria[Lopez-Carbo.Maria@epa.gov]; McKenna, Douglas[McKenna.Douglas@epa.gov]; Mclain, Jennifer[Mclain.Jennifer@epa.gov]; Mindrup, Mary[Mindrup.Mary@epa.gov]; Newberry, Debbie[Newberry.Debbie@epa.gov]; Oshida, Phil[Oshida.Phil@epa.gov]; Pabst, Douglas[Pabst.Douglas@epa.gov]; Parrotta, Nancy[Parrotta.Nancy@epa.gov]; Plastino, Michael[Plastino.Michael@epa.gov]; Poy, Thomas[poy.thomas@epa.gov]; Rodgers-Jenkins, Crystal[Rodgers-Jenkins.Crystal@epa.gov]; rogers, rick[rogers.rick@epa.gov]; Rubin, Howard E[Rubin.HowardE@epa.gov]; Springborg, Denise[Springborg.Denise@epa.gov]; Strong, Jamie[Strong.Jamie@epa.gov]; Thompkins, Anita[Thompkins.Anita@epa.gov]; Travers, David[Travers.David@epa.gov]; Vida, Stephen[Vida.Stephen@epa.gov]; Wisniewski, Patti-Kay[Wisniewski.Patti-Kay@epa.gov]; Workman, Rosemary[Workman.Rosemary@epa.gov]
From: Wadlington, Christina
Sent: Wed 1/11/2017 1:41:55 PM
Subject: BLOG: Drinking Water PAG

Good Morning,

FYI, we will also be posting a blog this afternoon (at 1pm) that describes the DW PAG.
Please find a copy of the draft text below.

**

EPA Providing Guidance for Drinking Water After Radiological Emergency

What would happen if there was an emergency in the U.S. that caused radioactive material to contaminate drinking water supplies? What steps could your utilities and government take?

This was one of the challenges the government of Tokyo in Japan had to address following the Fukushima nuclear power plant incident. To assist local governments and utilities here at home to plan for such a situation, EPA has developed guidance for use only during nationally significant radiological emergencies, such as a disaster at a nuclear power plant or use of an improvised nuclear device.

This non-regulatory guidance, called a drinking water Protection Action Guide (PAG), will help decision-makers to ensure public health protection during an emergency. The drinking water PAG identifies doses of radiation that should be avoided during an emergency event. The PAG can be used to determine when the use of contaminated water supplies should be restricted and alternative drinking water should be provided – to keep doses to the public as low as possible during emergency situations only. The drinking water PAG levels were calculated based on a maximum one-year exposure and provide a level of health protection roughly equivalent to EPA's mandatory drinking water standards for radionuclides, which are based on 70 years of exposure.

It's important to know that EPA's new guidance is not for use during normal water system operations and the PAG does not in any way affect or change EPA's drinking water standards for radionuclides. The PAG does not represent acceptable routine exposures for drinking water. As with all drinking water regulations, water systems exceeding standards, regardless of the reason, are in violation. EPA expects that the responsible party for any drinking water system adversely impacted during a radiation incident will take action to return to compliance with Safe Drinking Water Act maximum contaminant levels as soon as practicable. The guidance also does not impact actions occurring under other statutory authorities such as the EPA's Superfund program, the Nuclear Regulatory Commission's decommissioning program, or other federal or state programs.

Thinking about these scenarios is certainly not pleasant and we hope that our PAG never has to be used. But EPA takes these actions to ensure that our country can be better prepared to protect public health if emergencies occur.

From: Wadlington, Christina
Sent: Tuesday, January 10, 2017 2:20 PM
Subject: RELEASE: Drinking Water PAG

Good Afternoon,

Tomorrow, Wednesday, January 11, 2017, at 12:30pm, EPA will be posting a pre-publication FRN and an updated PAG manual that will include the new drinking water chapter here: https://www.epa.gov/radiation/protective-action-guides-pags.

In case it's useful, provided below is the desk statement.

Please let me know if you have any questions.

Thank you.

Christina Wadlington

Communications Director

Office of Ground Water and Drinking Water

U.S. Environmental Protection Agency

Tel: 202.566.1859

Email: wadlington.christina@epa.gov

Webpage: www.epa.gov/safewater

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DESK STATEMENT

EPA Releases Drinking Water Protective Action Guides and Planning Guidance for Radiological Incidents

During a radiological emergency, radioactive material could be released into the rivers, lakes, and streams used by public water suppliers. EPA is releasing non-regulatory guidance that authorities can use to protect residents from experiencing the harmful effects from radiation in drinking water following a nationally significant radiological emergency.

The drinking water Protective Action Guide is a level that can be used to determine when alternative drinking water should be provided and the use of contaminated water supplies be restricted. The drinking water PAG are doses of radiation that should be avoided during an emergency event up to one year). They do not represent acceptable routine exposures. PAGs trigger safety measures—in this case, provision of alternative drinking water -- to keep doses to the public as low as possible during emergency situations only.

The purpose of EPA's Protective Active Guide (PAG) for Radiological Incidents is to guide short-term planning and decision-making efforts by local and state officials. It is not intended for long-term or everyday use. The PAG does not affect EPA's drinking water standards for radionuclides. The PAG does not affect EPA's drinking water standards for radionuclides. Water systems exceeding standards, regardless of the reason, are in violation. EPA expects that the responsible party for any drinking water system adversely impacted during a radiation incident will take action to return to compliance with Safe Drinking Water Act (SDWA) maximum contaminant levels as soon as practicable. This guidance does not address or impact actions occurring under other statutory authorities such as the United States Environmental Protection Agency's (EPA) Superfund program, the Nuclear Regulatory Commission's (NRC) decommissioning program, or other federal or state programs.

Additional Background

The previous PAG Manual, entitled "Manual of Protective Action Guides and Protective Actions for Nuclear Incidents" (EPA-400-R-92-001, May 1992), was published by the U.S. EPA in 1992. In March 2013, EPA published an updated version of the document for public comment.

During the Fukushima nuclear power plant incident, the Agency had to develop drinking water guidance for U.S. citizens who might have been exposed to contamination from the incident. Since then, EPA has identified an emergency drinking water PAG as a priority. EPA recognized

that a short-term emergency drinking water guide may be useful for public health protection and sought the public's input on the appropriateness of, and possible values for, an intermediate phase emergency drinking water PAG.

The PAGs are developed for up to one year of exposure. In comparison, the Maximum Contaminant Levels (MCL) were developed assuming 70 years of continuous exposure. The PAGs are intended to 1) prevent short-term health effects, 2) balance protection with other important factors that may arise during an emergency (ensuring the actions result in more benefit than harm) and 3) reduce the potential for chronic health effects. In considering these key principles, the EPA is releasing a two-tiered drinking water drinking water PAGs of:

•□□□□□□□□ 500 mrem projected dose, for one year, to the general population

•□□□□□□□□ 100 mrem projected, for one year, to the most sensitive populations (e.g. infants, children, pregnant women and nursing women)

During the early Fukushima response, Japan used a very similar set of guides: about 100 mrem for infants on formula and about 400 mrem for everyone else. This helped Japanese officials prioritize the distribution of bottled water.

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The drinking water PAG was developed in consideration of several key factors, including existing radiation protection standards, the drinking water MCLs for radionuclides, excess health risks associated with the radiation doses identified in the draft 2013 PAG Manual, and standards that have been set in response to previous radiological incidents. The adult drinking water PAG of 500 mrem is consistent with both the FDA food PAG of 500 mrem and the 500 mrem one-year whole body dose guide for drinking water established by the Department of Homeland Security.

To: Christ, Lisa[Christ.Lisa@epa.gov]
From: Hernandez-Quinones, Samuel
Sent: Mon 1/9/2017 2:25:26 PM
Subject: DW PAGs

Hi Lisa,

Let me know when it is a good time so I can call you for a quick update on the PAGs.

Thanks

Sam

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water

Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

To: Burneson, Eric[Burneson.Eric@epa.gov]; Mclain, Jennifer[Mclain.Jennifer@epa.gov]
Cc: Greene, Ashley[Greene.Ashley@epa.gov]; Wadlington, Christina[Wadlington.Christina@epa.gov]; Christ, Lisa[Christ.Lisa@epa.gov]; Gonzalez, Yvonne V.[Gonzalez.Yvonne@epa.gov]
From: Grevatt, Peter
Sent: Tue 1/3/2017 10:25:31 PM
Subject: RE: PAG pre-meet materials
DW PAG pre meet with NGOs PCG.docx

Thanks. Grevatt comments on the pre-meet document are attached

From: Burneson, Eric
Sent: Tuesday, January 03, 2017 5:02 PM
To: Grevatt, Peter <Grevatt.Peter@epa.gov>; Mclain, Jennifer <Mclain.Jennifer@epa.gov>
Cc: Greene, Ashley <Greene.Ashley@epa.gov>; Wadlington, Christina <Wadlington.Christina@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Gonzalez, Yvonne V. <Gonzalez.Yvonne@epa.gov>
Subject: FW: PAG pre-meet materials

Peter: Attached and pasted below are the materials we plan to use for the pre brief with Joel for the stakeholder meeting on PAGS. Please note that the pdf files attached are FOIA materials that were referenced in an inside EPA article last week.

From: Christ, Lisa
Sent: Tuesday, January 03, 2017 4:11 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Oshida, Phil <Oshida.Phil@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>
Subject: PAG pre-meet materials

Hi Eric,

Attached is a briefing paper with

- Key messages
- Background
- Main concerns raised by NGOs during public comment.

I've also attached the two FOIA documents that were linked in the Inside EPA article, but not part of OW's release; the internal response to public comment document OGC reviewed and the current version of the rollout that is with OPA.

Lisa

DRINKING WATER PROTECTIVE ACTION GUIDE
Meeting with NGOs

- EPA is releasing **non-regulatory guidance** that authorities can use to protect residents from experiencing the harmful effects from radiation in drinking water following a **nationally significant radiological emergency**.
- EPA is recommending a two-tiered drinking water drinking water PAGs of:
    - 500 mrem projected dose, for one year, to the general population
    - 100 mrem projected, for one year, to the most sensitive populations (e.g. infants, children, pregnant women and nursing women).
- The PAG does not affect EPA's drinking water standards for radionuclides.
- Affected public water systems must take actions to return to drinking water regulatory limits as soon as practicable.

Background:

The drinking water Protective Action Guide is a level that can be used to determine when alternative drinking water should be provided and the use of contaminated water supplies be restricted. The drinking water PAG are doses of radiation that should be avoided during an emergency event. They do not represent acceptable routine exposures. PAGs trigger safety measures—in this case, provision of alternative drinking water -- to keep doses to the public as low as possible during emergency situations only.

The purpose of EPA's Protective Active Guide (PAG) for Radiological Incidents is to guide short-term planning and decision-making efforts by local and state officials. It is not intended for long-term or everyday use. The PAG does not affect EPA's drinking water standards for radionuclides. Water systems exceeding standards, regardless of the reason, are in violation. EPA expects that the responsible party for any drinking water system adversely impacted during a radiation incident will take action to return to compliance with Safe Drinking Water Act (SDWA) maximum contaminant levels as soon as practicable. This guidance does not address or impact actions occurring under other statutory authorities such as the United States Environmental Protection Agency's (EPA) Superfund program, the Nuclear Regulatory Commission's (NRC) decommissioning program, or other federal or state programs.

Public Comment:

EPA published its proposed Drinking Water PAG on the Federal Register on June 10, 2016. In response to the proposal EPA received approximately 60,000 comments during the public comment period which ended on July 25, 2016.

A large portion of the comments were sent as part of 2 mass mailing campaigns which are opposed to the PAGs proposal. In addition to the mass mailing campaign EPA reviewed close to 2,000 distinct comment letters. Out of these about 100 substantive comments were addressed by EPA for this PAG effort. EPA received comments from the following organizations:

Stakeholders Opposed to DW PAG	Stakeholders Supporting the DW PAG

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• Attorney General State of New York • Nuclear Energy and Resource Service (NIRS) • Public Employees for Environmental Responsibility (PEER) • Food and Water Watch • Fairewinds Energy Education • Cape Downwinders • Public Watchdogs • Blue Ridge Environmental Defense League • Physicians for Social Responsibility - Chesapeake • Council on Intelligent Energy & Conservation Policy • Committee to Bridge the Gap • Sierra Club • Citizens Environmental Coalition • Beyond Nuclear • Physicians for Social Responsibility – San Francisco • Nevada Nuclear Waste Task Force	• New York City Department of Environmental Protection • Illinois Emergency Management Agency (IEMA) • Conference of Radiation Control Program Directors • American Water Works Association (AWWA) • Nuclear Energy Institute (NEI) • Health Physics Society • Sandia National Laboratories

Concerns Raised During Public Comment:

- **EPA is relaxing its SDWA standards by allowing a significant increase in dose values and corresponding radionuclide concentrations:**
  "Although the current SDWA limits for radionuclides in water are 4 millirems (mrem) per year, the EPA proposes PAGs for drinking water to be as much as 500 mrem per year for the general population (or 100 mrem for pregnant/breastfeeding women, and children under 15). These levels are 125 and 25 times higher than the SDWA's recommended annual radiation dose."

  "the default DRLs would allow higher radioactive concentrations than those proposed in 2008, and thousands of times higher than current legal limits, and would allow the general population to drink water hundreds to thousands of times more radioactive than is now legal."

<u>Recommended EPA Response:</u>

EPA is not relaxing its drinking water standards for radionuclides as a result of the DW PAG. The drinking water PAG is non-regulatory guidance for nationally significant radiological emergencies only. Public water systems must comply with EPA's National Primary Drinking Water Regulations for Radionuclides. Water systems are expected to take corrective measures to meet radionuclide standards as soon as practicable and are in violation of SDWA until they do so. There is indeed an associated increase in the concentration of radionuclides that could yield a dose of 500 or 100 mrem versus a 4 mrem dose. However, these levels are used for different purposes.

- **Bush PAGs versus Obama PAGs**
  "EPA has now reversed itself again, and is proposing water PAGs orders of magnitude higher than its longstanding MCLs under the Safe Drinking Water Act and that are even more troubling than were those proposed in the last days of the prior administration. And similar to 2009, EPA again is

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apparently cutting corners in terms of transparency and public process in order to push through these worrisome proposals in the last months in office."

Recommended Response:

The 2009 drinking water PAG was obtained through a FOIA request, not released by EPA. For the 2016 proposal different assumptions were used, such as ingestion rates.

- **Duration of event/duration of PAGs in effect & PAGs could cover all radiological releases not only catastrophic nuclear emergencies**
  "the Water PAGs are for the intermediate phase of a release, not the immediate or early phase. The intermediate phase is defined as "the period beginning after the source and releases have been brought under control (has not necessarily stopped but is no longer growing) and reliable environmental measurements are available for use as a basis for decisions on protective actions and extending until these protective actions are no longer needed." Thus, the Water PAGs are not restricted to use in catastrophic events and are not even applicable to the emergency phase of such events. Rather, they apply by their own terms to any radiation release for which actions to protect the public might be contemplated."

Recommended Response:
These comments are noted, the PAG manual defines a radiological incident as an event or a series of events, deliberate or accidental, leading to the release or potential release into the environment of radioactive materials in sufficient quantity to warrant consideration of protective actions. PAGs are appropriate for use during a nationally significant radiological incident, such as a disaster at a nuclear power plant, detonation of a radiological dispersal device or an improvised nuclear device. The drinking water PAG assumes the duration of the event requiring protective actions should not exceed 1 year. EPA made additional statements in the chapter to clarify the one-year duration period.

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To: Christ, Lisa[Christ.Lisa@epa.gov]
From: Burneson, Eric
Sent: Tue 1/3/2017 5:06:45 PM
Subject: FW: Request for meeting with EPA Administrator Gina McCarthy re PAGs

From: Gude, Karen
Sent: Tuesday, January 03, 2017 12:04 PM
To: Grevatt, Peter <Grevatt.Peter@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Campbell, Ann <Campbell.Ann@epa.gov>
Subject: FW: Request for meeting with EPA Administrator Gina McCarthy re PAGs

Peter and Eric,

In preparing for this week's meeting with the NGOs on the DW PAGs, we have received some additional requests from the Diane D'Arrigo (NIRS), who is organizing the meeting on behalf of the external participants. She requested to know who would be participating in the meeting, and given that OAR is participating, she has specifically asked that a staff member from OLEM's Superfund Office (Stuart Walker) and the OGC SWERL attorney, Charles Openchowski, be invited to attend, as they apparently worked on some of the DW calculations in the overall OAR PAG document. Do you have thoughts/direction on whether to include the additional OLEM/OGC participants?

Currently, for the prebrief, we have included:

- OW IO:
  - Joel
  - Ann
- OGWDW:
  - Peter Grevatt
  - Jennifer Mclain

- Eric Burneson
- Lisa Christ
- Sam Hernandez
- Christina Wadlington
- Yvonne Gonzalez
- Ashley Greene

-

•□□□□□□□□ OGC:

- Carrie Wehling
- Paul Bangser

•□□□□□□□□ OAR:

- Jonathan Edwards
- Alan Perrin

I am still awaiting a final date/time from Diane for the actual meeting, and should have a final answer this afternoon – Thursday afternoon is our stated preference, with Friday being the other possibility.

Thanks,

Karen Gude, Special Assistant

U.S. Environmental Protection Agency

Office of Water

Phone: (202) 564-0831

From: Campbell, Ann
Sent: Thursday, December 29, 2016 10:05 AM
To: Gude, Karen <Gude.Karen@epa.gov>
Subject: Fwd: Request for meeting with EPA Administrator Gina McCarthy re PAGs

Ok. Let's see what works on the 5th or 6th. Not sure if we'll have the right folks in on the 6th to do this, so I'd start with the 5th.

Begin forwarded message:

> **From:** "Grevatt, Peter" <Grevatt.Peter@epa.gov>
> **Date:** December 29, 2016 at 10:02:36 AM EST
> **To:** "Campbell, Ann" <Campbell.Ann@epa.gov>
> **Cc:** "Beauvais, Joel" <Beauvais.Joel@epa.gov>, "Gude, Karen" <Gude.Karen@epa.gov>, "Loop, Travis" <Loop.Travis@epa.gov>, "Dennis, Allison" <Dennis.Allison@epa.gov>, "Burneson, Eric" <Burneson.Eric@epa.gov>, "Wadlington, Christina" <Wadlington.Christina@epa.gov>, "Gonzalez, Yvonne V." <Gonzalez.Yvonne@epa.gov>
> **Subject: Re: Request for meeting with EPA Administrator Gina McCarthy re PAGs**
>
> Sounds good. Thx.
>
> Sent from my iPhone
>
> On Dec 29, 2016, at 9:42 AM, Campbell, Ann <Campbell.Ann@epa.gov> wrote:
>
>> Peter, based on what I'm hearing from you and the limitations we're dealing with timing-wise, we'll look to have the meeting with the NGOs scheduled for the latter part of next week and plan for a potential rollout the week of Jan 9. This will give us the early part of next week to work with OMB.
>
>> On Dec 29, 2016, at 8:36 AM, Grevatt, Peter <Grevatt.Peter@epa.gov> wrote:
>
>>> We sent back our revisions to the FR notice yesterday. We mostly accepted what ONB gave us so hopefully this will be a straightforward transaction and we will have clearance soon. I'd like to have this in the bag before we meet, and that should not be a problem for the week after next. I'll keep you posted as I hear more from OMB. Thx.
>>>
>>> Sent from my iPhone
>>>
>>> On Dec 29, 2016, at 7:41 AM, Campbell, Ann <Campbell.Ann@epa.gov> wrote:

Thanks Peter. The groups that want to meet with us have proposed a meeting at the earliest on 1/6, a week from tomorrow. That would put us in to the following week, at the earliest, for the possible release of the PAG. I'd like to see if we can't get it on for 1/4 instead. What are your thoughts about the timing of the meeting?

On Dec 28, 2016, at 5:31 PM, Grevatt, Peter <Grevatt.Peter@epa.gov> wrote:

> We're in a good place with OMB on these. Last we heard, they still were touching base with other agencies to make sure everyone is on board. Will keep you posted.
>
> Sent from my iPhone
>
> On Dec 28, 2016, at 8:58 AM, Campbell, Ann <Campbell.Ann@epa.gov> wrote:
>
>> Wanted to give you both the heads up on this meeting request coming your way. I haven't heard where we landed with OMB late last week. The OA wants this scheduled for next week so it would be helpful to know where things are at so we can land this appropriately on the calendar. cc'ing Travis and Allison from a comms perspective.
>>
>> **From:** Gude, Karen
>> **Sent:** Wednesday, December 28, 2016 8:55 AM
>> **To:** Campbell, Ann <Campbell.Ann@epa.gov>
>> **Subject:** FW: Request for meeting with EPA Administrator Gina McCarthy re PAGs
>>
>> Ann,
>>
>> A heads up --- The AO is delegating a meeting with NGOs re: DW PAGs to Joel. Liel is reaching out to the requester and will loop me in, once this is done (given that Crystal is out) so that we can get this scheduled next week.
>>
>> Karen Gude, Special Assistant

U.S. Environmental Protection Agency

Office of Water

Phone: (202) 564-0831

From: Azoolin, Liel
Sent: Tuesday, December 27, 2016 10:09 AM
To: Gude, Karen <Gude.Karen@epa.gov>
Subject: FW: Request for meeting with EPA Administrator Gina McCarthy re PAGs

Hi Karen,

In our scheduling meeting last week, Matt Fritz suggested would be the best person to take this meeting. I just wanted to flag for you and make sure it's something he can do when he returns. Please let me know if it will be possible and I will loop Crystal in with their contact.

Thank you,

Liel

From: Azoolin, Liel
Sent: Wednesday, November 30, 2016 4:53 PM
To: scheduling <scheduling@epa.gov>
Subject: FW: Request for meeting with EPA Administrator Gina McCarthy re PAGs

From: Leavy, Jacqueline
Sent: Wednesday, November 30, 2016 4:45 PM
To: CMS.Sched <CMS.Sched@epa.gov>

Cc: Gaines, Cynthia <Gaines.Cynthia@epa.gov>; Azoolin, Liel <Azoolin.Liel@epa.gov>
Subject: FW: Request for meeting with EPA Administrator Gina McCarthy re PAGs

From: Diane D'Arrigo [mailto:dianed@nirs.org]
Sent: Wednesday, November 30, 2016 2:36 PM
To: Mccarthy, Gina <McCarthy.Gina@epa.gov>; scheduling <scheduling@epa.gov>
Cc: Diane D'Arrigo <dianed@nirs.org>; Catherine Thomasson <CThomasson@psr.org>; Geoff Fettus <gfettus@nrdc.org>; John Coequyt <John.Coequyt@sierraclub.org>; Damon Moglen <dmoglen@foe.org>; Wenonah Hauter (whauter@fwwatch.org) <whauter@fwwatch.org>; Lynn Thorp CWA <lthorp@cleanwater.org>; Anna Aurilio <asquared@environmentamerica.org>; Allison Fisher <afisher@citizen.org>; Paul Gallay <PGallay@riverkeeper.org>; Catherine Lincoln <catlincoln@aol.com>; Cindy Folkers <cindy@beyondnuclear.org>
Subject: Request for meeting with EPA Administrator Gina McCarthy re PAGs

Physicians for Social Responsibility ◆ Natural Resources Defense Council

Sierra Club ◆ Friends of the Earth ◆ Food and Water Watch

Clean Water Action ◆ Public Citizen ◆ Beyond Nuclear

Nuclear Information and Resource Service

Environment America ◆ Committee to Bridge the Gap ◆ Riverkeeper

November 30, 2016

Gina McCarthy, US EPA Administrator

US EPA Headquarters

William Jefferson Clinton Building

1200 Pennsylvania Avenue, N. W. Mail Code: 1101A

Washington, DC 20460

202-564-4700

McCarthy.gina@Epa.gov

Dear Administrator McCarthy:

We understand that you are close to deciding whether to approve the 2013 Protective Action Guides (PAGs) and the additional Radionuclide Drinking Water PAGs any day now. Please take one more step before making that important decision: meet with us one more time, to clarify critical information.

As you know our groups and many others have been diligently commenting and raising serious concerns for many years about the PAGs. We believe that some of the premises that are being used to justify your final adoption of these PAGs are incorrect and ask that you meet with us one last time before proceeding.

The pending PAG proposal would upend decades of clean water protections. We think it would be appropriate for you to meet with us and consider seriously the information we have to provide before embarking on such a significant step backwards in terms of public protections.

We call your attention to a recent investigative piece on the issue by NBC Bay Area, which can be watched at http://www.nbcbayarea.com/investigations/E-P-AS-NEW-EMERGENCY-PLAN-FOR-DRINKING-WATER-CONCERNS-MANY-401206656.html.

After many environmental victories and successes throughout your tenure, moving the nation forward to a cleaner, safer, more energy efficient environment, we ask that you not depart with an unnecessary action that will justify enormous increases in radioactivity in drinking water.

We appreciate your service and ask you to reconsider how approving the PAGs will affect your legacy. We would be extremely grateful to meet with you at your earliest convenience, before you make this critical decision.

Sincerely,

Diane D'Arrigo*

Director Radioactive Waste Project

Nuclear Information and Resource Service

Catherine Thomasson, M.D.

Executive Director

Physicians for Social Responsibility

Damon Moglen

Senior Strategic Advisor

Friends of the Earth

Lynn Thorp

National Campaigns Director

Clean Water Action

Geoff Fettus

Senior Attorney

Natural Resources Defense Council

John Coequyt

Director International Climate Programs

Sierra Club

Wenonah Hauter

Executive Director

Food and Water Watch

Anna Aurilio

Washington DC Office Director

Environment America

Allison Fisher

Outreach Director

Public Citizen

Paul Gallay

President

Hudson Riverkeeper

Catherine Lincoln

Executive Coordinator

Committee to Bridge the Gap

Cindy Folkers

Radiation Specialist

Beyond Nuclear

* *Point of contact*: Diane D'Arrigo 202-841-8588 dianed@nirs.org

<request for EPA Admin McCarthy meeting 11-30-16.docx>

To: Christ, Lisa[Christ.Lisa@epa.gov]
Cc: Ellis, Jerry[Ellis.Jerry@epa.gov]; Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]; Oshida, Phil[Oshida.Phil@epa.gov]; Huff, Lisa[Huff.Lisa@epa.gov]
From: Burneson, Eric
Sent: Tue 1/3/2017 3:17:24 PM
Subject: FW: PAGs

Lisa:

Thanks for all of your work last week to assure OMB clearance of the RADs PAG document. In addition to getting the final PAG documents forward for signature, we will also need to prepare for a meeting with outside groups who are concerned about the draft PAG.

Can you please put a pre-brief document together from the material we prepared for the Roll-out. The document should include

PAG summary

Key issues raised by commenters and EPA response:

Summary of the information released in the FOIA

Eric

From: Beauvais, Joel
Sent: Tuesday, January 03, 2017 9:51 AM
To: Grevatt, Peter <Grevatt.Peter@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Campbell, Ann <Campbell.Ann@epa.gov>
Subject: PAGs

Good morning – happy new year! Let's incorporate anything relevant from this into the pre-brief for meeting with the NGOs:

INSIDEEPA.COM
an online news service from the publishers of Inside EPA

EPA Documents Reveal PAG Water Radiation Allowances Far Above SDWA

EPA has released documents that reveal the agency is recommending protective drinking water levels for scores of radionuclides after a radiological emergency that significantly exceed Safe Drinking Water Act (SDWA) limits, and that the agency previously only released a few of these levels publicly in order to “avoid confusion.”

The release, in response to a Freedom of Information Act (FOIA) lawsuit by Public Employees for Environmental Responsibility (PEER), reveals new concentration levels under the agency's proposed water chapter for its Protective Action Guides (PAG) for radiological emergencies for dozens of radionuclides. In the draft version of the chapter available for public comment, EPA had only released limits for four of the 110 radionuclides covered, and declined to reveal how much they differed from SDWA limits, according to PEER, which represents local, state and federal environmental agency employees.

“To cover its embarrassment after being caught dissembling about Fukushima fallout on American soil, EPA is pursuing a justification for assuming a radioactive fetal position even in cases of ultra-high contamination,” PEER Executive Director Jeff Ruch said in a Dec. 22 press release. “The Safe Drinking Water Act is a federal law; it cannot be nullified or neutered by regulatory ‘guidance,’” he added. The PAGs are EPA guidance, rather than a regulation.

The highly controversial water chapter is currently undergoing review at the White House Office of Management & Budget (OMB). Once finalized, it is slated to be included in EPA’s PAG manual, which the agency issued in early December. The manual revises a 1992 version and sets radiological protection criteria for federal, state, local and tribal emergency response officials to use in a wide variety of incidents involving a radiological release.

The proposed water chapter would deem protective action dose levels of 500 millirems/year (mrem/yr) in the first year after an incident for the general population, and 100 mrem/yr in the first year for infants, children age 15 and under, and pregnant or nursing women, according to a notice of availability for the draft drinking water PAG.

PEER in October sued EPA to release data on the proposed water PAG that the group

has argued would help justify a stricter guidance. The suit in part sought documents disclosing the allowable concentrations of radioactivity in drinking water that EPA is proposing for 110 radionuclides, after the group repeatedly raised concerns that the proposal would set new concentrations, or Derived Response Levels (DRLs), for 110 radionuclides, but disclosed only three of those concentrations. Even prior to the FOIA release, dozens of environmental groups and the New York's attorney general's office were severely critical of the draft drinking water chapter and urged EPA to scrap it.

To: Christ, Lisa[Christ.Lisa@epa.gov]
Cc: Wadlington, Christina[Wadlington.Christina@epa.gov]
From: Burneson, Eric
Sent: Tue 1/3/2017 2:53:22 PM
Subject: FW: PAGs

From: Beauvais, Joel
Sent: Tuesday, January 03, 2017 9:51 AM
To: Grevatt, Peter <Grevatt.Peter@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Campbell, Ann <Campbell.Ann@epa.gov>
Subject: PAGs

Good morning – happy new year! Let's incorporate anything relevant from this into the pre-brief for meeting with the NGOs:

INSIDEEPA.COM
an online news service from the publishers of Inside EPA

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To: Muellerleile, Caryn[Muellerleile.Caryn@epa.gov]; Evalenko, Sandy[Evalenko.Sandy@epa.gov]; Curry, Bridgid[Curry.Bridgid@epa.gov]
Cc: Flaharty, Stephanie[Flaharty.Stephanie@epa.gov]; Greene, Ashley[Greene.Ashley@epa.gov]; Christ, Lisa[Christ.Lisa@epa.gov]; Owens, Nicole[Owens.Nicole@epa.gov]
From: Arrigoni, Holly
Sent: Fri 12/30/2016 3:14:35 PM
Subject: RE: OW transmitting FRN EPA Drinking Water PAG 11-21-16 for OMB review

I am here – I didn't think there was anyone around to upload to ROCIS. I will forward them to you now.

From: Muellerleile, Caryn
Sent: Friday, December 30, 2016 10:04 AM
To: Evalenko, Sandy <Evalenko.Sandy@epa.gov>; Curry, Bridgid <Curry.Bridgid@epa.gov>
Cc: Arrigoni, Holly <Arrigoni.Holly@epa.gov>; Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>; Greene, Ashley <Greene.Ashley@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Owens, Nicole <Owens.Nicole@epa.gov>
Subject: RE: OW transmitting FRN EPA Drinking Water PAG 11-21-16 for OMB review

Hello,

OMB is asking about the status of the drinking water PAG. Is anyone available in OW as POC for this item today?

Thanks,

Caryn

564-2855

From: Evalenko, Sandy
Sent: Wednesday, November 23, 2016 9:43 AM
To: Muellerleile, Caryn <Muellerleile.Caryn@epa.gov>; Curry, Bridgid <Curry.Bridgid@epa.gov>
Cc: Arrigoni, Holly <Arrigoni.Holly@epa.gov>; Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>; Greene, Ashley <Greene.Ashley@epa.gov>; Christ, Lisa

<Christ.Lisa@epa.gov>; Owens, Nicole <Owens.Nicole@epa.gov>
Subject: OW transmitting FRN EPA Drinking Water PAG 11-21-16 for OMB review
Importance: High

I've added the RIn number to the FRN file.

Caryn/Bridgid: Joel Beauvais has reviewed and edited the Final PAGs FRN. This is ready to go to OMB for review. Please email us when it's transmitted to OMB.

Thanks for your assistance with this! Happy Thanksgiving!

Sandy

From: Greene, Ashley
Sent: Tuesday, November 22, 2016 4:38 PM
To: Evalenko, Sandy <Evalenko.Sandy@epa.gov>; Arrigoni, Holly <Arrigoni.Holly@epa.gov>
Cc: Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>
Subject: RE: FRN EPA Drinking Water PAG 11-21-16

Hi Sandy and Holly,

Please see attached both clean and tracked versions with Joel's edits addressed to the FRN. This should be good to provide to OP now to then provide to OMB.

Steph will be in tomorrow morning if there are additional questions or items needed to move forward.

Thanks,

Ashley

From: Beauvais, Joel
Sent: Monday, November 21, 2016 12:56 PM
To: Grevatt, Peter <Grevatt.Peter@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Campbell, Ann <Campbell.Ann@epa.gov>
Subject: FRN EPA Drinking Water PAG 11-21-16

Peter/Eric - My comments on the PAG FRN. I have no further comments on the RTC or other documents.

Joel

To: Dennis, Allison[Dennis.Allison@epa.gov]
Cc: Christ, Lisa[Christ.Lisa@epa.gov]; Rodgers-Jenkins, Crystal[Rodgers-Jenkins.Crystal@epa.gov]; Loop, Travis[Loop.Travis@epa.gov]
From: Wadlington, Christina
Sent: Thur 12/29/2016 4:33:59 PM
Subject: Re: PAGs rollout announcement date pushed back

Thanks Allison,

We're all set though correct? I believe all the PAG comm materials have been cleared?

Sent from my iPhone

On Dec 29, 2016, at 10:56 AM, Dennis, Allison <Dennis.Allison@epa.gov> wrote:

> Due to a meeting that just popped up on Joel's schedule (delegated down from the Administrator) on the DW PAG doc w/a number of enviro/public health groups being scheduled for the latter part of next week, the release of the final DW PAGS doc has been pushed back to the following week—we are aiming to roll it out on Wednesday the 11th. - Allison

To: Christ, Lisa[Christ.Lisa@epa.gov]
Cc: Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]
From: Hernandez-Quinones, Samuel
Sent: Mon 12/26/2016 10:17:43 PM
Subject: Hernandez-Quinones, Samuel has shared 'Concurrence Package Final DW PAGs'

Hi Lisa, I am making sure that I sent this link to you in case there needs to be anything done regarding the transmittal letters. I also uploaded the latest versions of the PAG Document as well as the FR Notice on one drive.

Please let me know if there is anything I can assist with on these hopefully final stages of the PAG. Ex. 6 - Personal Privacy and also Ex. 6 - Personal Privacy @gmail.com

Thanks
Sam

Go to Concurrence Package Final DW PAGs

Get the OneDrive mobile app! Available for

To: Burneson, Eric[Burneson.Eric@epa.gov]
Cc: Christ, Lisa[Christ.Lisa@epa.gov]; Huff, Lisa[Huff.Lisa@epa.gov]
From: Hernandez-Quinones, Samuel
Sent: Thur 12/22/2016 8:34:26 PM
Subject: Edited Version of DW PAG
Clean Version EPA Draft Final Drinking Water PAG (OMB 12-21-16) - OGWDW Response.docx
Redline Version EPA Draft Final Drinking Water PAG (OMB 12-21-16) - OGWDW Response.docx

Hi Eric,

Attached are the edited versions (redline/clean) of the DW PAG after considering and addressing OMB comments as well as the recommendations from DoD.

Let me know if you have any additional comments. Please don't hesitate to contact me anytime if I am needed to make any edits or revisions on this document.

Thanks

Sam

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water

Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

To: Grevatt, Peter[Grevatt.Peter@epa.gov]
Cc: Mclain, Jennifer[Mclain.Jennifer@epa.gov]; Greene, Ashley[Greene.Ashley@epa.gov]; Burneson, Eric[Burneson.Eric@epa.gov]; Christ, Lisa[Christ.Lisa@epa.gov]
From: Wadlington, Christina
Sent: Tue 12/20/2016 3:27:46 PM
Subject: PETER REIVEW: PAGS Blog
PAGS_BLOG_v3.docx

Peter,

As a part of the PAGS roll out, comms would like to release a blog that clarifies some of the questions that have been circulating in the media and public.

Can you please review the attached and provide comments or edits?

Thank you.

To: Christ, Lisa[Christ.Lisa@epa.gov]; Mccarthy, Gina[McCarthy.Gina@epa.gov]
Cc: crborello@aol.com[crborello@aol.com]; Ridenour, Steve[Ridenour.Steve@epa.gov]; Anderson, RobinM[Anderson.RobinM@epa.gov]; Walker, Stuart[Walker.Stuart@epa.gov]; Schuver, Henry[Schuver.Henry@epa.gov]; lennysiegel@gmail.com[lennysiegel@gmail.com]; Marc Edwards[edwardsm@vt.edu]; ccwits@sbcglobal.net[ccwits@sbcglobal.net]; mjroll@sbcglobal.net[mjroll@sbcglobal.net]; chuckosborne@neo.rr.com[chuckosborne@neo.rr.com]; damsel16@aol.com[damsel16@aol.com]; GColeridge@afsc.org[GColeridge@afsc.org]; greg.m.schwartz@gmail.com[greg.m.schwartz@gmail.com]; dianed@nirs.org[dianed@nirs.org]; danny@350.org[danny@350.org]; danni@pogo.org[danni@pogo.org]; judibrightwell@gmail.com[judibrightwell@gmail.com]; tammyproctor@hotmail.com[tammyproctor@hotmail.com]; scribman33@yahoo.com[scribman33@yahoo.com]; rachel@ecobooks.com[rachel@ecobooks.com]; ann@freshwaterfuture.org[ann@freshwaterfuture.org]; jrichards13@neo.rr.com[jrichards13@neo.rr.com]; grapevinerealestate@roadrunner.com[grapevinerealestate@roadrunner.com]; EdJulieR@aol.com[EdJulieR@aol.com]; joreilly@fuse.net[joreilly@fuse.net]; ceh65471@windstream.net[ceh65471@windstream.net]; hughes@ovis.net[hughes@ovis.net]; fight848@gmail.com[fight848@gmail.com]; glassart@fortyfrogfarm.com[glassart@fortyfrogfarm.com]; nirs@nirs.org[nirs@nirs.org]; Spalding, Curt[Spalding.Curt@epa.gov]; Enck, Judith[Enck.Judith@epa.gov]; Rodrigues, Cecil[rodrigues.cecil@epa.gov]; Kaplan, Robert[kaplan.robert@epa.gov]; Curry, Ron[Curry.Ron@epa.gov]; Hague, Mark[Hague.Mark@epa.gov]; McGrath, Shaun[McGrath.Shaun@epa.gov]; Strauss, Alexis[Strauss.Alexis@epa.gov]; McLerran, Dennis[mclerran.dennis@epa.gov]; dianed@nirs.org[dianed@nirs.org]
From: Carmine Vasile
Sent: Mon 12/19/2016 5:38:09 PM
Subject: Correction to Federal Register Volume 81, Number 112 (Friday, June 10, 2016), Pages 37589-37592, "Draft Protective Action Guide (PAG) for Drinking Water After a Radiological Incident"

[redacted]

EPA-PAG-Objection-12_17_16.pdf

Lisa M. Christ, Standards and Risk
Management Division,
Office of Ground Water and Drinking Water,
Mail Code 4607M,
U.S. Environmental Protection Agency,
1200 Pennsylvania
Avenue NW., Washington, DC 20460
(202) 564-8354; fax (202) 564-3758;
Email: christ.lisa@epa.gov.

Correction to "*Draft Protective Action Guide (PAG) for Drinking Water After a Radiological Incident*"
(Federal Register Volume 81, Number 112 (Friday, June 10, 2016), Pages 37589-37592 @ **https://www.gpo.gov/fdsys/pkg/FR-2016-06-10/html/2016-13786.htm**)

Dear Ms. Christ: Please take notice that the Food and Drug Administration (FDA) has no MCLs for radionuclides dissolved in bottled water, as discussed in "***Measurement of Radon-222 and Lead-210 in Bottled Spring Water***" by Timothy A. DeVol, John P. Clements and Lara D. Hughes, Environmental Engineering & Science Department, Clemson University (http://info.ngwa.org/GWOL/pdf/070580714.pdf)

Its Table 1 (***Summary of previously reported NORM levels in bottled drinking water.***) indicates the FDA has been permitting the sale of radioactive water, bottled in America and other countries, that contained between 2.19 & 59.05 pCi/L of Radium-226. Such water could deliver radiation doses ranging

from 13.7 to 369 mrem/yr, according to "***Health-Based Radionuclide Concentrations in Drinking Water and Air***", Argonne National Laboratory, EVS Human Health Fact Sheet, March 2007.

Accordingly, and for additional reasons set forth in my Objection below, please delete the following section from paragraph C on pg. 37590, entitled "***What is the PAG Manual: Protective Action Guides and Planning Guidance for Radiological Incidents?***"

- "***The proposed PAG is designed to work in concert with the other Protective Action Guides currently in place for other media in the intermediate phase (i.e., the Food and Drug Administration's 500 mrem PAG for ingestion of food) and provides an additional level of protection for the most sensitive life stages.***"

After deleting this erroneous paragraph, please re-open the comment period and add the revised Objection from www.gfxtechnology.com/PAG.pdf to a new set of comments, based on the fact that the FDA has never acted to protect the American people from being poisoned by radioactive water.

Yours truly,
Dr Carmine F. Vasile
B.S.E.E., M.S. & Ph.D. Electrophysics
60 Herbert Circle
Patchogue, NY 11772
631-807-7839

From: gfx-ch@msn.com
Sent: Tuesday, December 13, 2016 5:36 PM
To: 'mccarthy.gina@epa.gov'
Cc: 'crborello@aol.com'; 'ridenour.steve@epa.gov'; 'anderson.robinm@epa.gov'; 'walker.stuart@epa.gov'; 'Schuver.Henry@epamail.epa.gov'; 'lennysiegel@gmail.com'; 'edwardsm@vt.edu'; 'ccwits@sbcglobal.net'; 'mjroll@sbcglobal.net'; 'chuckosborne@neo.rr.com'; 'damsel16@aol.com'; 'GColeridge@afsc.org'; 'greg.m.schwartz@gmail.com'; 'dianed@nirs.org'; 'danny@350.org'; 'danni@pogo.org'; 'judibrightwell@gmail.com'; 'tammyproctor@hotmail.com'; 'scribman33@yahoo.com'; 'rachel@ecobooks.com'; 'ann@freshwaterfuture.org'; 'jrichards13@neo.rr.com'; 'grapevinerealestate@roadrunner.com'; 'EdJulieR@aol.com'; 'joreilly@fuse.net'; 'ceh65471@windstream.net'; 'hughes@ovis.net'; 'fight848@gmail.com'; 'glassart@fortyfrogfarm.com'; 'nirs@nirs.org'; 'spalding.curt@epa.gov'; 'enck.judith@epa.gov'; 'Rodrigues.cecil@Epa.gov'; 'Kaplan.robert@Epa.gov'; 'Curry.ron@Epa.gov'; 'Hague.mark@Epa.gov'; 'McGrath.shaun@Epa.gov'; 'Strauss.alexis@Epa.gov'; 'mclerran.dennis@epa.gov'; 'dianed@nirs.org'
Subject: Objection to Draft Protective Action Guides for Radionuclides in Drinking Water, (Docket Number (EPA-HQ-OAR-2007-0268; FRL-9947-55-OW) FR 81:112 page 37589-37592, June 10, 2016)

<snipped>
EPA Administrator Gina McCarthy:
Hon. Gina McCarthy: Please review the graphs and tables in Exhibits A-I of the attached "EPA-PAG-Objection-12_13_16.pdf", written in support of PEER's comments. I hereby object to your Agency's PAG notice as published in the 6/10/16 Federal Register with this false claim: "***The proposed PAG is designed to work in concert with the other Protective Action Guides currently in place for other media in the intermediate phase (i.e., the Food and Drug Administration's 500 mrem PAG for ingestion of food) and provides an additional level of protection for the most sensitive life stages.***"

First, the FDA has no Alpha, Beta or Gamma MCLs for bottled radioactive water or beverages.

Second, as illustrated in Exhibit A, your Agency's ***Sum-of-the-Fractions*** method indicates doses to

teenagers & adults will exceed **500 mrem/yr** if they drink only 2 liters/day of water containing a fraction of the proposed PAG concentrations for Sr-90, I-131, Cs-137. In fact, if their decay products are included, the dose to thousands of people could exceed the current MCL of **4 mrem/yr** by over **18,320 mrem/yr (0.183 Sv/yr)**, as illustrated in Table I:

Table I: Sum-of-the-Fractions Method Indicates Worst Case Doses Can Exceed 500 mrem/yr (5 mSv/yr)

Emitter	(X) Proposed PAG Concertration (pCi/L)	(Y) Dose Conversion Factor (pCi/4mrem)	(X/Y = A) Calculated Fraction	(A*4) Calculated Total mrem	Half-Life
Stronyium-90 (Sr-90)	7,400	8	925	3,700	28.79 yr
Yttrium-90 (Y-90)	7,400 (T>20 days)	60	123.3	493.2	2.761 d
Iodine-131 (I-131)	10,350	3	3,450	13,800	8.023 d
Xenon-131m (Xn-131m)	75.5 (T=10 days)	n/a	n/a	n/a	11.93 d
Cesium-137 (Cs-137)	16,570	200	82.85	331.4	30.04 yr
Barium-137m (Ba-137m)	15,642 (T>20 min)	n/a	n/a	n/a	2.552 min
		Sum-of-the-Fractions	**>4,581**	**>18,324**	**>183.24 mSv/yr**
Gross Beta	**57,438 pCi/L**	**MCL Exceedance**		**>18,320 mrem/yr**	**>183.2 mSv/yr**

NY State Officials Cannot Be Trusted

Contrary to EPA-propaganda cited in Footnote #1, my water quality reports indicate corrupt NY State officials cannot be trusted to use the Sum-of-the Fractions Method in the event of an emergency to determine when alternative drinking water should be provided and the use of contaminated water supplies should be restricted. Consequently, thousands of men, women & children could be ingesting atomic-energy doses far in excess of **500 mrem/yr**. Exhibits A-I indicate the proponents of this heinous scam failed to use modern analysis tools like Nucleonica to estimate radiation doses delivered by 2 liters per day of water that may contain dozens of fission products in addition to dozens of naturally occurring radionuclides having no proposed PAG values, as discussed in the pending PEER lawsuit cited in Footnote #3.

Many corrupt state & county health departments, including mine, have never imposed the Sum-of-the-Fractions method on any public water company, despite numerous complaints to EPA, state & county officials.

Fraudulent Use of EPA Method 900 Alters Test Samples To Suppress In-growth

Water quality reports @ www.scwa.com, www.gfxtechnology.com/Radon.html, www.gfxtechnology.com/SCL.pdf, www.gfxtechnology.com/CCE.pdf contain false Gross Alpha & Gross Beta test results obtained by EPA Method 900, which can suppress in-growth of decay products from both man-made & naturally occurring radionuclides dissolved in tap or bottled water. For example, as shown in the enclosed graphs for Cs-137 & Sr-90, total activity quickly exceeds the initial activity of either a parent after being dissolved in water. (See other graphs @ www.gfxtechnology.com/1-Ci.pdf)

Therefore, you must reject the proposed PAGs and add MCLs for Radon gases to the Safe Drinking Water Act as Congress ordered decades ago. [***Radon in Drinking Water Rule***, Federal Register on November 2, 1999 (64 FR 59246)]

Yours truly,

Dr Carmine F. Vasile
B.S.E.E., M.S. & Ph.D. Electrophysics
60 Herbert Circle
Patchogue, NY 11772

631-807-7839
<snipped>

To: Christ, Lisa[Christ.Lisa@epa.gov]; Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]
From: Wadlington, Christina
Sent: Thur 12/15/2016 7:22:30 PM
Subject: PAGS roll out
ROLL OUT PAGS FINAL.cw.docx

Are you ok with these changes to the desk statement?

Wed Dec 14 09:06:25 EST 2016
Labbe.Ken@epamail.epa.gov
FW: Objection to Draft Protective Action Guides for Radionuclides in Drinking Water, (Docket Number (EPA-HQ-OAR-2007-0268; FRL-9947-55-OW) FR 81:112 page 37589-37592, June 10, 2016)
To: CMS.OEX@epamail.epa.gov

From: Carmine Vasile [mailto:gfx-ch@msn.com]
Sent: Tuesday, December 13, 2016 5:36 PM
To: Mccarthy, Gina <McCarthy.Gina@epa.gov>
Cc: crborello@aol.com; Ridenour, Steve <Ridenour.Steve@epa.gov>; Anderson, RobinM <Anderson.RobinM@epa.gov>; Walker, Stuart <Walker.Stuart@epa.gov>; Schuver, Henry <Schuver.Henry@epa.gov>; lennysiegel@gmail.com; Marc Edwards <edwardsm@vt.edu>; ccwits@sbcglobal.net; mjroll@sbcglobal.net; chuckosborne@neo.rr.com; damsel16@aol.com; GColeridge@afsc.org; greg.m.schwartz@gmail.com; dianed@nirs.org; danny@350.org; danni@pogo.org; judibrightwell@gmail.com; tammyproctor@hotmail.com; scribman33@yahoo.com; rachel@ecobooks.com; ann@freshwaterfuture.org; jrichards13@neo.rr.com; grapevinerealestate@roadrunner.com; EdJulieR@aol.com; joreilly@fuse.net; ceh65471@windstream.net; hughes@ovis.net; fight848@gmail.com; glassart@fortyfrogfarm.com; nirs@nirs.org; Spalding, Curt <Spalding.Curt@epa.gov>; Enck, Judith <Enck.Judith@epa.gov>; Rodrigues, Cecil <rodrigues.cecil@epa.gov>; Kaplan, Robert <kaplan.robert@epa.gov>; Curry, Ron <Curry.Ron@epa.gov>; Hague, Mark <Hague.Mark@epa.gov>; McGrath, Shaun <McGrath.Shaun@epa.gov>; Strauss, Alexis <Strauss.Alexis@epa.gov>; McLerran, Dennis <mclerran.dennis@epa.gov>; dianed@nirs.org
Subject: Objection to Draft Protective Action Guides for Radionuclides in Drinking Water, (Docket Number (EPA-HQ-OAR-2007-0268; FRL-9947-55-OW) FR 81:112 page 37589-37592, June 10, 2016)

EPA Administrator Gina McCarthy:

Hon. Gina McCarthy: Please review the graphs and tables in Exhibits A-I of the attached "EPA-PAG-Objection-12_13_16.pdf", written in support of PEER's comments. I hereby object to your Agency's PAG notice as published in the 6/10/16 Federal Register with this false claim: "***The proposed PAG is designed to work in concert with the other Protective Action Guides currently in place for other media in the intermediate phase (i.e., the Food and Drug Administration's 500 mrem PAG for ingestion of food) and provides an additional level of protection for the most sensitive life stages.***"

First, the FDA has no Alpha, Beta or Gamma MCLs for bottled radioactive water or beverages.

Second, as illustrated in Exhibit A, your Agency's ***Sum-of-the-Fractions*** method indicates doses to teenagers & adults will exceed **500 mrem/yr** if they drink only 2 liters/day of water containing a fraction of the proposed PAG concentrations for Sr-90, I-131, Cs-137. In fact, if their decay products are included, the dose to thousands of people could exceed the current MCL of **4 mrem/yr** by over **18,320 mrem/yr (0.183 Sv/yr)**, as illustrated in Table I:

Table I: Sum-of-the-Fractions Method Indicates Worst Case Doses Can Exceed 500 mrem/yr (5 mSv/yr)

Emitter	(X) Proposed PAG Concertration (pCi/L)	(Y) Dose Conversion Factor (pCi/4 mrem)	(X/Y = A) Calculated Fraction	(A*4) Calculated Total mrem	Half-Life
Stronyium-90 (Sr-90)	7,400	8	925	3,700	28.79 yr
Yttrium-90 (Y-90)	7,400 (T>20 days)	60	123.3	493.2	2.761 d
Iodine-131 (I-131)	10,350	3	3,450	13,800	8.023 d
Xenon-131m (Xn-131m)	75.5 (T=10 days)	n/a	n/a	n/a	11.93 d
Cesium-137 (Cs-137)	16,570	200	82.85	331.4	30.04 yr
Barium-137m (Ba-137m)	15,642 (T>20 min)	n/a	n/a	n/a	2.552 min
Sum-of-the-Fractions			**>4,581**	**>18,324**	**>183.24 mSv/yr**
Gross Beta	**57,438 pCi/L**	**MCL Exceedance**		**>18,320 mrem/yr**	**>183.2 mSv/yr**

NY State Officials Cannot Be Trusted

Contrary to EPA-propaganda cited in Footnote #1, my water quality reports indicate corrupt NY State officials cannot be trusted to use the Sum-of-the Fractions Method in the event of an emergency to determine when alternative drinking water should be provided and the use of contaminated water supplies should be restricted. Consequently, thousands of men, women & children could be ingesting atomic-energy doses far in excess of **500 mrem/yr**. Exhibits A-I indicate the proponents of this heinous scam failed to use modern analysis tools like Nucleonica to estimate radiation doses delivered by 2 liters per day of water that may contain dozens of fission products in addition to dozens of naturally occurring radionuclides having no proposed PAG values, as discussed in the pending PEER lawsuit cited in Footnote #3.

Many corrupt state & county health departments, including mine, have never imposed the Sum-of-the-Fractions method on any public water company, despite numerous complaints to EPA, state & county officials.

Fraudulent Use of EPA Method 900 Alters Test Samples To Suppress In-growth

Water quality reports @ www.scwa.com, www.gfxtechnology.com/Radon.html, www.gfxtechnology.com/SCL.pdf, www.gfxtechnology.com/CC
Gross Alpha & Gross Beta test results obtained by EPA Method 900, which can suppress in-growth of decay products from both man-made & naturally occurring radionuclides dissolved in tap or bottled water. For example, as shown in the enclosed graphs for Cs-137 & Sr-90, total activity quickly exceeds the initial activity of either a parent after being dissolved in water. (See other graphs @ www.gfxtechnology.com/1-Ci.pdf)

Therefore, you must reject the proposed PAGs and add MCLs for Radon gases to the Safe Drinking Water Act as Congress ordered decades ago. [***Radon***

in Drinking Water Rule, Federal Register on November 2, 1999 (64 FR 59246)]

Yours truly,

Dr Carmine F. Vasile

B.S.E.E., M.S. & Ph.D. Electrophysics

60 Herbert Circle

Patchogue, NY 11772

631-807-7839

-----Original Message-----
From: crborello <crborello@aol.com>
To: crborello <crborello@aol.com>
Sent: Tue, Nov 22, 2016 11:09 am
Subject: For Ms. McCarthy's review: PAGs , radiation and EPA 900 Methods

Subject: **PAGs & US EPA Finished Drinking Water 900 Method being used on raw untreated water suspected of containing radiation**

US EPA Aministrator Gina McCarthy

Washington D.C.

Dear Ms. McCarthy,

Please kindly review the below comments. ***They are based primarily upon your agency's own former top radiation experts and other top US government radiation experts I have consulted with over the decades.***

In approx. 2003, deeply concerned technical experts within your agency had personally warned me about the **PAGs** being proposed even back then. I strongly believe they shared this with me because they were already acutely aware of the deeply troubling situation regarding radiation and testing at our Uniontown IEL Superfund site in Ohio. In this same time frame in the mid 2000s, after reviewing the US EPA's/corporations' data base on IEL, top independent university radiation experts indeed estimated the IEL toxic landfill may contain up **to 1/2 ton of deadly Plutonium and other dangerous radiation** isotopes, but may have been underestimated given outdated, questionable methods permitted by US EPA's NAREL. However, apparently due to the perceived severe politics/pressures involved, and thanks to US Region 5 bowing to the corporations' wishes, even the most basic clean up of mere institutional controls were killed off that your agency *had promised the community would be implemented to help mitigate the outward migration of toxins by isolating the hundreds of tons of waste perched just a few feet above the water table linked to the area's sole source aquifer system serving up to 600,000 Ohioans in several counties. Instead this Superfund Site continues to freely flush to this day..*

Ms. McCarthy, I believe that those same US EPA experts **who had long ago shared their worries about the PAGs being implemented all too well understood the "gaming" of the rad testing that had already been going on for years. .... - i.e, so called "compliance monitoring"** - using the US EPA

"Finished Drinking Water 900 Methods" - methods meant for finished, treated water systems and they said was never meant to be used on raw, untreated water sources found like at IEL. Please see numerous letters documenting these serious deviations away from what is considered to be best available science in letters to EPA found on our group's website: http://cclt.starksummit.org

Thus, the EPA scientists not simply expressed their fears of the PAGs being misused leaving Americans at risk to dangerous radiation, *but they likewise raised serious concerns to me about the US EPA's unscientific usage of the "EPA Finished Drinking Water 900 Methods" on raw, untreated water sources suspected of containing radiation, which is what occurred at Uniontown IEL.*

Therefore, I am writing you today to not only ask that you NOT sign off on the PAGs , but to please issue a change in policy immediately, before this Administration ceases, to once and for all prohibit the US EPA from allowing/prescribing/condoning the continued usage of the EPA Finished Drinking Water 900 Methods whenever raw, untreated water suspected of containing radiation is involved.

Important note**: While those same EPA whistle blowers had thought by 2000 they had at least stopped this practice of using the 900 on raw, untreated water after this was erroneously done to the Uniontown IEL Superfund Site, we have outrageously come to learn in recent years in working on fracking issues that US EPA continues to apparently suggest/permit others consulting the EPA to use the Finished Drinking Water 900 Methods on raw fracking waste water, despite the scientific evidence going against this being allowed, if in fact, there is a desire to learn the true amounts of water soluble radium 226 present **in the fracking wastes.** Experts consulted over the years advised me that they believed that while most people know that Plutonium is deadly, many do not understand that given the way **the water soluble radium** can be metabolized = bone seeking, even more in the body than Plutonium, which is somewhat excreted, **It is essential that EPA take these steps immediately to insure credible data is gathered given the vast amounts of fracking wastes being discharged daily into our US communities in Ohio, PA., W. Virginia, New York and elsewhere, or many more IEL landfills will occur.

Sincerely,

Chris Borello, President , Concerned Citizens of Lake Twp.

Uniontown IEL Superfund Site, Ohio

Re:

-----Original Message-----
From: Diane D'Arrigo - NIRS <nirs@nirs.org>
To: crborello <crborello@aol.com>
Sent: Mon, Nov 21, 2016 7:23 pm
Subject: Tell EPA - Stop Dangerous Radioactive Drinking Water!

NUCLEAR INFORMATION AND RESOURCE SERVICE • 6930 Carroll Ave., Ste. 340 • Takoma Park, MD, 20912 • (301) 270-6477 • www.nirs.org
November 21, 2016
Dear Friend,
In July, thousands of us took action to stop dangerous new radiation guidance for drinking water. The EPA refused to listen, and now this guidance could be approved anytime--unless we act now!
Environmental Protection Agency (EPA) Administrator Gina McCarthy is on the verge of approving radiation levels hundreds and thousands of times higher than currently allowed in drinking water and at cleaned-up Superfund sites. These mis-named "Protective" Action Guides for Drinking Water (Water PAGs) dramatically INCREASE allowable radioactivity in water. Enormous levels of invisible but deadly radioactive contamination would be permitted in drinking water for weeks, months or even years after a nuclear accident or "incident." The PAGs *are not* for the immediate phase after a radioactive release but *the next phase*--which could last for years--when local residents may return home to contaminated water and not know the danger.
Take action now: Protect drinking water from dangerous radiation levels!
There are two quick actions to take today:

1. **Tell your EPA Regional Administrator (see map and list below)** to ask EPA Administrator Gina McCarthy why she is raising radiation levels allowed in drinking water.
2. **Send a message to Administrator McCarthy** yourself asking her not to approve these dangerous radiation levels in drinking water.

December 13, 2016

The Honorable Gina McCarthy (McCarthy.Gina@epa.gov) Administrator United States Environmental Protection Agency William Jefferson Clinton Building 1200 Pennsylvania Avenue, N.W. Mail Code 1101A Washington, D.C. 20460	Dr. Carmine F. Vasile, B.S.E.E., M.S. & Ph.D. Electrophysics 60 Herbert Circle Patchogue, NY 11772 631-807-7839

Objection

Re: Draft Protective Action Guides for Radionuclides in Drinking Water

(Docket Number (EPA-HQ-OAR-2007-0268; FRL-9947-55-OW) FR 81:112 page 37589-37592, June 10, 2016)

Hon. Gina McCarthy & PEER Members ***Listed in the July 25, 2016 letter to the EPA @***

www.peer.org/assets/docs/7-26-63OrganizationsPAGsComments.pdf

In support of PEER's comments, I hereby object to your Agency's PAG notice as published in the 6/10/16 Federal Register with this false claim: " ***The proposed PAG is designed to work in concert with the other Protective Action Guides currently in place for other media in the intermediate phase (i.e., the Food and Drug Administration's 500 mrem PAG for ingestion of food) and provides an additional level of protection for the most sensitive life stages.***"

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Second, as illustrated in Exhibit A, your Agency's ***Sum-of-the-Fractions*** method indicates doses to teenagers & adults will exceed **500 mrem/yr** if they drink only 2 liters/day of water containing a fraction of the proposed PAG concentrations for Sr-90, I-131, Cs-137 . In fact, if their decay products are included, the dose to thousands of people could exceed the current MCL of **4 mrem/yr** by over **18,320 mrem/yr (0.183 Sv/yr)**, as illustrated in Table I.

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		Sum-of-the-Fractions	**>4,581**	**>18,324**	**>183.24 mSv/yr**
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NY State Officials Cannot Be Trusted

Contrary to EPA-propaganda cited in Footnote # **1**, my water quality reports indicate corrupt NY State officials cannot be trusted to use the Sum-of-the Fractions Method [2] in the event of an emergency to determine when alternative drinking water should be provided and the use of contaminated water supplies should be restricted. Consequently, thousands of men, women & children could be ingesting atomic-energy doses far in excess of **500 mrem/yr**. Exhibits A-I indicate the proponents of this heinous scam failed to use modern analysis tools like Nucleonica to estimate radiation doses delivered by 2 liters per day of water that may contain dozens of fission products in addition to dozens of naturally occurring radionuclides having no proposed PAG values, as discussed in the pending PEER lawsuit cited in Footnote **#3**.

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Fraudulent Use of EPA Method 900 Alters Test Samples To Suppress In-growth

Water quality reports @ www.scwa.com, www.gfxtechnology.com/Radon.html, www.gfxtechnology.com/SCL.pdf, www.gfxtechnology.com/CCE.pdf contain false Gross Alpha & Gross Beta test results obtained by EPA Method 900, which can suppress in-growth of decay products from both man-made & naturally occurring radionuclides dissolved in tap or bottled water. For example, as shown in the enclosed graphs for Cs-137 & Sr-90, total activity quickly exceeds the initial activity of either a parent after being dissolved in water. (See other graphs @ www.gfxtechnology.com/1-Ci.pdf)

Therefore, you must reject the proposed PAGs and add MCLs for Radon gases to the Safe Drinking Water Act as Congress ordered decades ago. [***Radon in Drinking Water Rule***, Federal Register on November 2, 1999 (64 FR 59246)]

Yours truly,

Dr. Carmine F. Vasile

---

[1] **At what point and what concentrations will I be told to stop drinking tap water during a radiological emergency?**
State and local officials will make decisions about continued use of tap water based upon the conditions on-site during a radiological emergency. The proposed drinking water PAG provides information they will consider, including two scientifically-based levels to be avoided (100 mrem for infants, children aged 15 and under, pregnant women and nursing women; 500 mrem for anyone over age 15 excluding pregnant women and nursing women) for periods up to one year. Since this is only guidance, the levels selected by your state or local officials will depend on the type and severity of the incident.You may not be instructed to stop drinking tap water. Your water department—in coordination with state/local officials and emergency managers—may choose to either use water from storage tanks that have not been impacted by radiation, purchase water from a neighboring town, transport water in tanker trucks or provide [unregulated, radioactive] bottled water to the community. (From: https://www.epa.gov/radiation/proposed-drinking-water-protective-action-guide-paq-radiological-emergencies-information)

[2] **See EPA ILLUSTRATION II-1 "Conversion of Beta Particle and Photon Emitters" @** https://nepis.epa.gov/Exe/ZyPDF.cgi/P1009DJN.PDF?Dockey=P1009DJN.PDF .

[3] **See PEER Lawsuit @** http://www.peer.org/assets/docs/epa/10_24_16_Complaint_EPA-radionuclides.pdf .

Exhibit A: Erroneous example of "Sum-of-the-Fractions" method mandated by the EPAs Radionuclides Rule to determine if a public water system is in compliance with the 4 mrem/yr MCL for beta particle and photon radioactivity (40 CFR 141.66(d))[4,5].

ILLUSTRATION II-1
Conversion of Beta Particle and Photon Emitters

A water system near a nuclear power facility collects a sample which the laboratory speciates by EPA method 902.0 (gamma spectrometry analysis). The laboratory also analyses for strontium-90 using EPA method 905.0. The analysis indicates the following:

Cesium-134 (Cs-134): 5,023 pCi/L
Cesium-137 (Cs-137): 30 pCi/L
Strontium-90 (Sr-90): 4 pCi/L
Iodine-131 (I-131): 2 pCi/L

To determine compliance the following calculations are completed:

Emitter	(X) Lab Analysis (pCi/L)	(Y) Conversion from table (pCi/4mrem)	(X/Y=A) Calculated Fraction[1]	(A*4) Calculated Total mrem[2]
Cs-134	5,023	20,000	0.25115	
I-131	2	3	0.7	
Cs-137	30	200	0.150	
Sr-90	4	8	0.5	
		Sum-of-the-fractions	1.60115	7

[1] To ensure accuracy, the results were rounded to the number of figures in the conversion table. See Appendix I.
[2] Since data reported to the State or EPA should be in a form containing the same number of significant digits as the MCL, the results were rounded to one significant digit. The last significant digit was increased by one unit if the digit dropped was a 5, 6, 7, 8, or 9; and was not altered if the preceding number was a 0, 1, 2, 3, or 4.

The system is in violation of the MCL because the "sum-of-the-fractions" is 7 mrem, which means that the sum of the annual dose equivalent to the total body, or to any internal organ, exceeds 4 mrems/year.

From: EPA Implementation Guidance for Radionuclides, Page II-2 @ https://nepis.epa.gov/Exe/ZyPDF.cgi/P1009DJN.PDF?Dockey=P1009DJN.PDF

Exhibit B. Corrected version of Table A using Cs-134m; parent of Cs-134.

Emitter	(X) Lab Analysis (pCi/L)	(Y) Conversion from Table (pCi/4mrem)	(X/Y = A) Calculated Fraction	(A*4) Calculated Total mrem	Half-Life
Cs-134m	5,023	20,000	0.25115		2.908 hr
I-131	2	3	0.7		8.023 d
Cs-137	30	200	0.15		30.04 yr
Sr-90	4	8	0.5		28.79 yr
		Sum-of-the-Fractions	1.6015	7	.07 mSv/yr
Gross Beta	5,059 pCi/L	MCL Exceedance		3 mrem/yr	0.03 mSv/yr

[4] To determine compliance, each beta and photon emitter must be converted from pCi/L to millirems using the conversion tables listed in "***Maximum Permissible Body Burdens and Maximum Permissible Concentrations of Radionuclides in Air or Water for Occupational Exposure***" [National Bureau of Standards (NBS) Handbook 69 as amended August, 1963, U.S. Department of Commerce and/or ***Radionuclides in Drinking Water: A Small Entity Compliance Guide***; pg 13 @ https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=20001ZIN.txt]
ff

[5] Each Curie of ingested Alpha radiation delivers 20 times the atomic energy of a Curie of Beta or Photon radiation. One Joule per Kilogram = 1 Sievert (Sv) = 100 Rem
ff

Exhibit C. Modified version of Table B including time-dependant radioactive decay products.*

Parent Emitter	Lab Analysis of Parents (pCi/L)	Radioactive Decay Products	Calculated Fraction of Parent Activity Using Nucleonica
Cs-134m	5,023	Cs-134	1.58e-3 (after 10 hours of in-growth)
I-131	2	Xn-131m gas	7.29e-3 (after 10 days of in-growth)
Cs-137	30	Ba-137m	0.944 (after 20 min of in-growth)
Sr-90	4	Y-90	1.00 (after 20 days of in-growth)

Emitter	(X) Lab & Nucleonica Analysis (pCi/L)	(Y) Conversion from Table (pCi/4mrem)	(X/Y = A) Calculated Fraction	(A*4) Calculated Total mrem	Half-Life
Cs-134m	5,023	20,000	0.25115		2.908hr
Cs-134	7.94 (T=10 hr)	80	0.09925	0.397	2.065 yr
I-131	2	3	0.7		8.023 d
Xn-131m	0.0146 (T=10 days)	n/a	n/a	n/a	11.93 d
Cs-137	30	200	0.15		30.04 yr
Ba-137m	28.3 (T>20 min)	n/a	n/a	n/a	2.552 min
Sr-90	4	8	0.5		28.79 yr
Y-90	4 (T>20 days)	60	0.0667	0.2668	2.761 d
		Sum-of-the-Fractions	**>2.26495**	**>9**	**>0.09 mSv/yr**
Gross Beta	**5,071 pCi/L**	**MCL Exceedance**		**>9 mrem/yr**	**>0.09 mSv/yr**

* Decay product Activity & Half-Life values from tables @ www.gfxtechnology.com/1-Ci.pdf.

Exhibit D. Modified version of Table C corresponding to Water-PAG concentrations proposed by President Obama for I-131, Cs-137 & Sr-90, which excluded ingested radiation doses from their highly radioactive decay products: Xn-131m, Ba-137m & Y-90, respectively.

Emitter	Lab Analysis (pCi/L)	Radioactive Decay Products	Calculated Fraction of Parent Activity Using Nucleonica
Cs-134	5,023	None	n/a
I-131	10,350	Xn-131m gas	0.64e-3 (after 1 day of in-growth) 7.29e-3 (after 10 days of in-growth)
Cs-137	16,370	Ba-137m	0.944 (after 20 min of in-growth)
Sr-90	7,400	Y-90	1.00 (after 20 days of in-growth)

Emitter	(X) Lab Analysis (pCi/L)	(Y) Conversion from Table (pCi/4mrem)	(X/Y = A) Calculated Fraction	(A*4) Calculated Total mrem	Half-Life
Cs-134	n/a	20,000	n/a		2.908 hr
Cs-134m	n/a	80	n/a		2.065 yr
I-131	10,350	3	3,450		8.023 d
Xn-131m	75.5 (T=10 days)	n/a	n/a		11.93 d
Cs-137	16,570	200	82.85		30.04 yr
Ba-137m	15,642 (T>20 min)	n/a	n/a		2.552 min
Sr-90	7,400	8	925		28.79 yr
Y-90	7,400 (T>20 days)	60	123.3		2.761 d
		Sum-of-the-Fractions	**>4,581**	**>18,324**	**>183.24 mSv/yr**
Gross Beta	**57,438 pCi/L**	**MCL Exceedance**		**>18,320 mrem/yr**	**>183.2 mSv/yr**

Exhibit E. Nucleonica Analysis of 1-Ci of Sr-90

Nucleonica Results @ 20 Days Table A: Total & Beta Activity corresponding to Table D, Figs. 3 & 4		
Curve	Name	Activity (Ci)
	38 Sr90	0.9987
	39 Y90	0.9937
	40 Zr90 Stable	0
	Total:	1.992

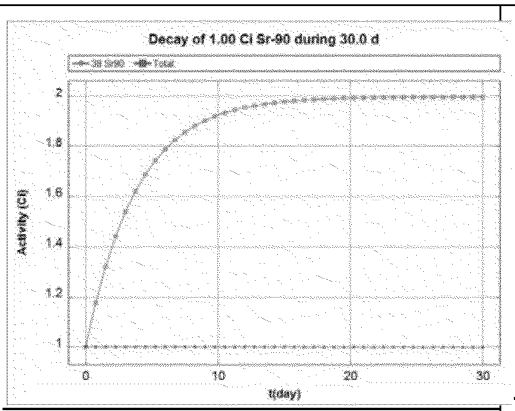


Fig. 2 Total Radioactivity produced by 1 Curie of Sr-90, a Beta Emitter; 0 to 30 days.

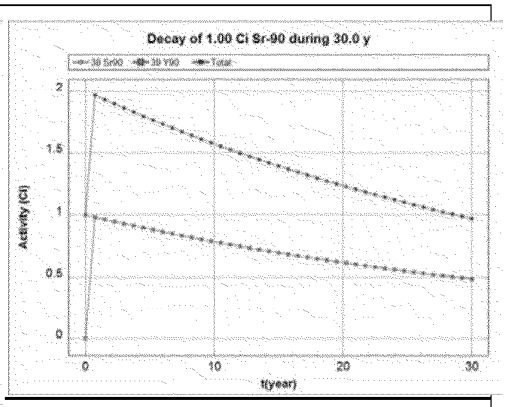


Fig. 3 Beta activity produced by 1 Curie of Sr-90; 0 to 30 years (1/2-Life = 27.9).

Table B: Radioactivity & atomic energy from 1-Curie of 30-day old Sr-90

ID	Nuclides	Half-Life	Decay Modes	N (Atoms)	Mass (g)	Mass Fractions	A (Ci)	A/ Aparent	A_α (Ci)	$A_{\beta\square}$ (Ci)	Energy (J)
1	38 Sr90	28.79 y	β-	4.84e+19	7.23e-3	0.998	0.998	1.00	0	0.998	8.38e+3
2	39 Y90	2.671 d	β-	1.23e+16	1.84e-6	2.53e-4	0.998	1.00	0	0.998	3.05e+4
3	40 Zr90	Stable		8.35e+16	1.25e-5	1.72e-3	0	0	0	0	0
	Total: 3			**4.85e+19**	**7.24e-3**	**1.00**	**1.99**	**2.00**	**0**	**1.99**	**3.89e+4**

Exhibit F. Nucleonica Analysis of 1-Ci of I-131

Nucleonica Results @ 12 hr Table A: Total & Beta Activity corresponding to Table B, Figs. 1 & 2		
Curve	Name	Activity (Ci)
	53 I131	0.9615
	54 Xe131 Stable	0
	54 Xe131 m	2.772e-4
	Total:	0.9618

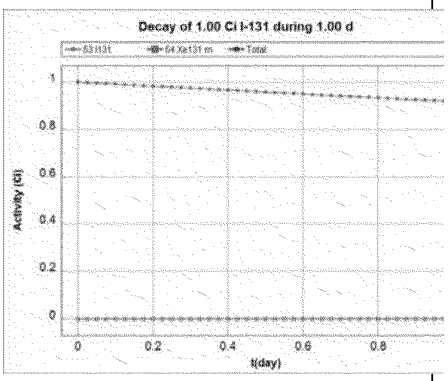
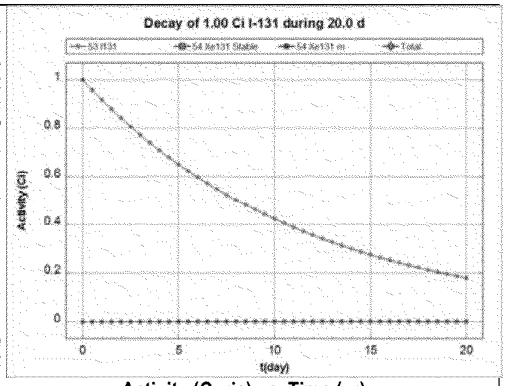


Fig. 1 Total Radioactivity produced by 1 Curie of I-131, a Beta Emitter; 0 to 1 day.



Activity (Curie) vs. Time (yr)

Fig. 2 Beta activity produced by 1 Curie of Cs-134; 0 to 20 day (1/2-Life = 8.0233 day).

Table B: Radioactivity & atomic energy 1-Curie of 1 day old I-131

ID	Nuclides	Half-Life	Decay Modes	N (Atoms)	Mass (g)	Mass Fractions	A (Ci)	A/ Aparent	A_α (Ci)	$A_{\beta\square}$ (Ci)	Energy (J)
1	53 I131	8.0233 d	β-; β-	3.39e+16	7.38e-6	0.918	0.917	1.00	0	0.917	475
2	54 Xe131	Stable		3.03e+15	6.59e-7	0.0819	0	0	0	0	0
3	54 Xe131 m	11.930 d	IT	3.23e+13	7.02e-9	8.73e-4	5.87e-4	6.40e-4	0	0	0.0253
	Total: 3			**3.70e+16**	**8.04e-6**	**1.00**	**0.919**	**1.00**	**0**	**0.916**	**476**

Exhibit G. Nucleonica Analysis of 1-Ci of Cs-134m

Nucleonica Results @ 1/2 hr Table A: Total & Beta Activity corresponding to Table B, Figs. 1 & 2		
Curve	Name	Activity (Ci)
	55 Cs134 m	0.8875
	55 Cs134	1.808e-5
	Total:	0.8875

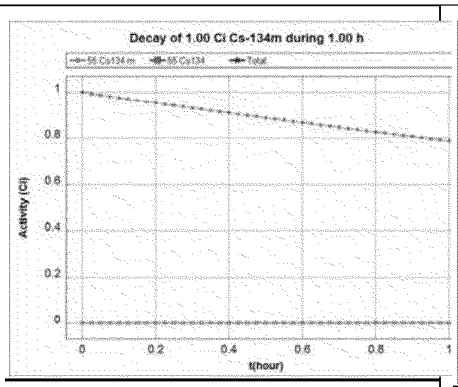


Fig. 1 Total Radioactivity produced by 1 Curie of Cs-134m, a Beta Emitter; 0 to 1 Hour.

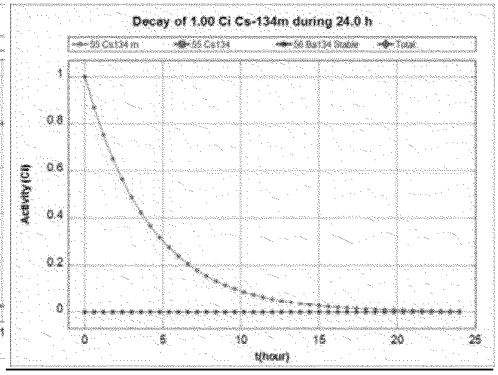


Fig. 2 Beta activity produced by 1 Curie of Cs-134m; 0 to 1 day (1/2-Life = 2.908 hr).

Table B: Radioactivity & atomic energy 1-Curie of 1 day old Cs-134m.

ID	Nuclides	Half-Life	Decay Modes	N (Atoms)	Mass (g)	Mass Fractions	A (Ci)	A/ Aparent	A_α (Ci)	$A_{\beta\square}$ (Ci)	Energy (J)
1	55 Cs134 m	2.908 h	IT	1.83e+12	4.07e-10	3.28e-3	3.28e-3	1.00	0	0	12.4
2	55 Cs134	2.0651 y	β-; ec	5.57e+14	1.24e-7	0.998	1.60e-4	0.0488	0	1.60e-4	0.140
3	56 Ba134 Stable	Stable		4.24e+11	9.43e-11	7.60e-4	0	0	0	0	0
	Total: 3			**5.59e+14**	**1.24e-7**	**1.00**	**3.43e-3**	**1.05**	**0**	**1.60e-4**	**12.5**

Exhibit H. Nucleonica Analysis of 1-Ci of Cs-134

Nucleonica Results @ 12 hr Table A: Total & Beta Activity corresponding to Table B, Figs. 1 & 2		
Curve	Name	Activity (Ci)
	55 Cs134	0.9995
	56 Ba134 Stable	0
	Total:	0.9995

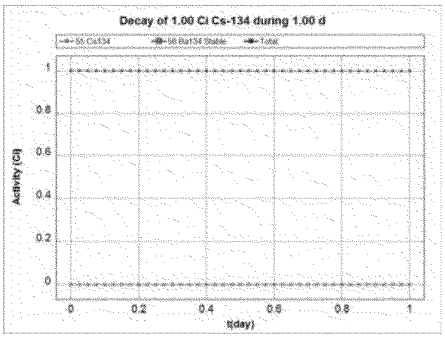
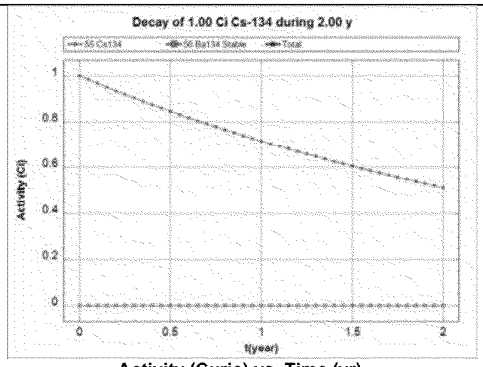


Fig. 1 Total Radioactivity produced by 1 Curie of Cs-134, a Beta Emitter; 0 to 1 day.



Activity (Curie) vs. Time (yr)

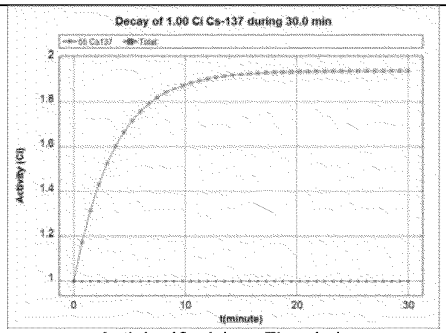
Fig. 2 Beta activity produced by 1 Curie of Cs-134; 0 to 2 yr (1/2-Life = 2.065 yr).

Table B: Radioactivity & atomic energy 1-Curie of 1 day old Cs-134.

ID	Nuclides	Half-Life	Decay Modes	N (Atoms)	Mass (g)	Mass Fractions	A (Ci)	A/ Aparent	A_α (Ci)	$A_{\beta\square}$ (Ci)	Energy (J)
1	55 Cs134	2.0651 y	β-; ec	3.48e+18	7.73e-4	0.998	0.999	1.00	0	0.999	1.05e+3
2	56 Ba134	Stable		3.20e+15	7.10e-7	9.18e-4	0	0	0	0	0
	Total: 2			**3.48e+18**	**7.74e-4**	**1.00**	**1.00**	**1.00**	**0**	**1.00**	**1.05e+3**

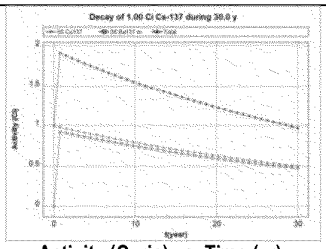
Exhibit I. Nucleonica Analysis of 1-Ci of Cs-137

Nucleonica Results @ 20 Minutes		
Table A: Total & Beta Acctivity corresponding to Table B, Figs. 1 & 2		
Curve	Name	Activity (Ci)
	55 Cs137	1.000
	56 Ba137 m	0.9398
	56 Ba137 Stable	0
	Total:	1.940



Activity (Curie) vs. Time (yr)

Fig. 1 Total Radioactivity produced by 1 Curie of Cs-137, a Beta Emitter; 0 to 30 minutes (1/2-Life = 30.03 yr).



Activity (Curie) vs. Time (yr)

Fig. 2 Beta activity produced by 1 Curie of Cs-137; 0 to 30 yr (1/2-Life = 30.03 yr).

Table B: Radioactivity & atomic energy 1-Curie of 30-minute old C-137

ID	Nuclides	Half-Life	Decay Modes	N (Atoms)	Mass (g)	Mass Fractions	A (Ci)	A/ Aparent	A_α (Ci)	A_β (Ci)	Energy (J)
1	55 Cs137	30.04 y	β-; β-	5.06e+19	0.0115	1.00	1.00	1.00	0	1.00	5.88
2	56 Ba137 m	2.552 m	IT	7.71e+12	1.75e-9	1.52e-7	0.944	0.944	0	0	5.85
3	56 Ba137	Stable		5.89e+13	1.34e-8	1.16e-6	0	0	0	0	0
	Total: 3			**5.06e+19**	**0.0115**	**1.00**	**1.94**	**1.94**	**0**	**1.00**	**11.7**

Table C: Falsified Gross Beta test results from the 2002 Water Quality Report; Table 31 @ http://www.gfxtechnology.com/Radon.html [1] [2]

Component	Low Value	High Value	Avg. Value	Number of Tests
Gross Alpha Activity pci/l	ND	1.5	ND	9
Gross Beta Activity pci/l	ND	2.0	ND	9
Cesium-137 pci/l	ND	10.1	ND	9
Lead-210 pci/l	ND	ND	ND	9
Radon	NA	NA	NA	0

Table C: The excerpt below is from the 2003 water quality report by the Suffolk County Water Authority (SCWA) and shows 232 pCi/L Alpha activity from Radon-222, but only 4.0 pCi/L Alpha activity from Rn-222, Po-210, Po-214 & Po-218 & only 5.1 pCi/L of of Gross Beta from 10.1 pCi/L of Cs-137 & 1,080 pCi/L of Lead-210, which emit a total of 2,160 pCi/L of Gross Beta & 1,080 of Polonium-210; far above is MCL.

Distribution Area 20

Radioactivity	Range of Readings Low Value	High Value	Avg. Value	No. of Tests
Gross Alpha activity pCi/l	ND	4.0	ND	59
Gross Beta activity pCi/l	ND	5.1	ND	59
Cesium-137 pCi/l	ND	10.1	ND	53
Lead-210 pCi/l	ND	1080	20.8	53
Radon pCi/l	ND	232	ND	50

NOTES

[1] Tables A & Fig. 1 indicate the total Beta Activity produced by one Curie of Cs-137 grows to 1.94 Curies in less than 20 minutes after being dissolved in water. Table B & Fig. 2 show it takes about 30 years for the total Beta activity to reach the initial activity of Cs-137. Therefore the Gross Beta activity reported by the SCWA should have been 1.94 x 10.1 = 19.6 pCi/L not 2.0 pCi/L.

[2] The SCWA's RAILROAD AVE well field is located south of the BNL & Grumman Superfund sites. It had 2 wells ##S-32359, S-81473 located in Center Moriches in 2001; SCWA Distribution Area # 20 in 2002 serving: Mastic, Mastic Beach, Moriches, North Shirley, Ridge, Shoreham, South Manor, South Ridge & Westhampton Beach with radioactive water.

December 13, 2016

The Honorable Gina McCarthy (McCarthy.Gina@epa.gov) Administrator United States Environmental Protection Agency William Jefferson Clinton Building 1200 Pennsylvania Avenue, N.W. Mail Code 1101A Washington, D.C. 20460	Dr. Carmine F. Vasile, B.S.E.E., M.S. & Ph.D. Electrophysics 60 Herbert Circle Patchogue, NY 11772 631-807-7839

Objection

Re: Draft Protective Action Guides for Radionuclides in Drinking Water

(Docket Number (EPA-HQ-OAR-2007-0268; FRL-9947-55-OW) FR 81:112 page 37589-37592, June 10, 2016)

Hon. Gina McCarthy & PEER Members ***Listed in the July 25, 2016 letter to the EPA @***

www.peer.org/assets/docs/7-26-63OrganizationsPAGsComments.pdf

In support of PEER's comments, I hereby object to your Agency's PAG notice as published in the 6/10/16 Federal Register with this false claim: " ***The proposed PAG is designed to work in concert with the other Protective Action Guides currently in place for other media in the intermediate phase (i.e., the Food and Drug Administration's 500 mrem PAG for ingestion of food) and provides an additional level of protection for the most sensitive life stages.***"

First, the FDA has no Alpha, Beta or Gamma MCLs for bottled radioactive water or beverages.

Second, as illustrated in Exhibit A, your Agency's ***Sum-of-the-Fractions*** method indicates doses to teenagers & adults will exceed **500 mrem/yr** if they drink only 2 liters/day of water containing a fraction of the proposed PAG concentrations for Sr-90, I-131, Cs-137 . In fact, if their decay products are included, the dose to thousands of people could exceed the current MCL of **4 mrem/yr** by over **18,320 mrem/yr (0.183 Sv/yr)**, as illustrated in Table I.

Table I: Sum-of-the-Fractions Method Indicates Worst Case Doses Can Exceed 500 mrem/yr (5 mSv/yr)

Emitter	(X) Proposed PAG Concertration (pCi/L)	(Y) Dose Conversion Factor (pCi/4mrem)	(X/Y = A) Calculated Fraction	(A*4) Calculated Total mrem	Half-Life
Stronyium-90 (Sr-90)	7,400	8	925	3,700	28.79 yr
Yttrium-90 (Y-90)	7,400 (T>20 days)	60	123.3	493.2	2.761 d
Iodine-131 (I-131)	10,350	3	3,450	13,800	8.023 d
Xenon-131m (Xn-131m)	75.5 (T=10 days)	n/a	n/a	n/a	11.93 d
Cesium-137 (Cs-137)	16,570	200	82.85	331.4	30.04 yr
Barium-137m (Ba-137m)	15,642 (T>20 min)	n/a	n/a	n/a	2.552 min
		Sum-of-the-Fractions	**>4,581**	**>18,324**	**>183.24 mSv/yr**
Gross Beta	**57,438 pCi/L**	**MCL Exceedance**		**>18,320 mrem/yr**	**>183.2 mSv/yr**

NY State Officials Cannot Be Trusted

Contrary to EPA-propaganda cited in Footnote # **1**, my water quality reports indicate corrupt NY State officials cannot be trusted to use the Sum-of-the Fractions Method [2] in the event of an emergency to determine when alternative drinking water should be provided and the use of contaminated water supplies should be restricted. Consequently, thousands of men, women & children could be ingesting atomic-energy doses far in excess of **500 mrem/yr**. Exhibits A-I indicate the proponents of this heinous scam failed to use modern analysis tools like Nucleonica to estimate radiation doses delivered by 2 liters per day of water that may contain dozens of fission products in addition to dozens of naturally occurring radionuclides having no proposed PAG values, as discussed in the pending PEER lawsuit cited in Footnote **#3**.

Many corrupt state & county health departments, including mine, have never imposed the Sum-of-the-Fractions method on any public water company, despite numerous complaints to EPA, state & county officials.

Fraudulent Use of EPA Method 900 Alters Test Samples To Suppress In-growth

Water quality reports @ www.scwa.com, www.gfxtechnology.com/Radon.html, www.gfxtechnology.com/SCL.pdf, www.gfxtechnology.com/CCE.pdf contain false Gross Alpha & Gross Beta test results obtained by EPA Method 900, which can suppress in-growth of decay products from both man-made & naturally occurring radionuclides dissolved in tap or bottled water. For example, as shown in the enclosed graphs for Cs-137 & Sr-90, total activity quickly exceeds the initial activity of either a parent after being dissolved in water. (See other graphs @ www.gfxtechnology.com/1-Ci.pdf)

Therefore, you must reject the proposed PAGs and add MCLs for Radon gases to the Safe Drinking Water Act as Congress ordered decades ago. [***Radon in Drinking Water Rule***, Federal Register on November 2, 1999 (64 FR 59246)]

Yours truly,

Dr. Carmine F. Vasile

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[1] **At what point and what concentrations will I be told to stop drinking tap water during a radiological emergency?**
State and local officials will make decisions about continued use of tap water based upon the conditions on-site during a radiological emergency. The proposed drinking water PAG provides information they will consider, including two scientifically-based levels to be avoided (100 mrem for infants, children aged 15 and under, pregnant women and nursing women; 500 mrem for anyone over age 15 excluding pregnant women and nursing women) for periods up to one year. Since this is only guidance, the levels selected by your state or local officials will depend on the type and severity of the incident.You may not be instructed to stop drinking tap water. Your water department—in coordination with state/local officials and emergency managers—may choose to either use water from storage tanks that have not been impacted by radiation, purchase water from a neighboring town, transport water in tanker trucks or provide [unregulated, radioactive] bottled water to the community. (From: https://www.epa.gov/radiation/proposed-drinking-water-protective-action-guide-paq-radiological-emergencies-information)

[2] **See EPA ILLUSTRATION II-1 "Conversion of Beta Particle and Photon Emitters" @** https://nepis.epa.gov/Exe/ZyPDF.cgi/P1009DJN.PDF?Dockey=P1009DJN.PDF .

[3] **See PEER Lawsuit @** http://www.peer.org/assets/docs/epa/10_24_16_Complaint_EPA-radionuclides.pdf .

Exhibit A: Erroneous example of "Sum-of-the-Fractions" method mandated by the EPAs Radionuclides Rule to determine if a public water system is in compliance with the 4 mrem/yr MCL for beta particle and photon radioactivity (40 CFR 141.66(d))[4,5].

ILLUSTRATION II-1
Conversion of Beta Particle and Photon Emitters

A water system near a nuclear power facility collects a sample which the laboratory speciates by EPA method 902.0 (gamma spectrometry analysis). The laboratory also analyses for strontium-90 using EPA method 905.0. The analysis indicates the following:

Cesium-134 (Cs-134): 5,023 pCi/L
Cesium-137 (Cs-137): 30 pCi/L
Strontium-90 (Sr-90): 4 pCi/L
Iodine-131 (I-131): 2 pCi/L

To determine compliance the following calculations are completed:

Emitter	(X) Lab Analysis (pCi/L)	(Y) Conversion from table (pCi/4mrem)	(X/Y=A) Calculated Fraction[1]	(A*4) Calculated Total mrem[2]
Cs-134	5,023	20,000	0.25115	
I-131	2	3	0.7	
Cs-137	30	200	0.150	
Sr-90	4	8	0.5	
		Sum-of-the-fractions	1.60115	7

[1] To ensure accuracy, the results were rounded to the number of figures in the conversion table. See Appendix I.
[2] Since data reported to the State or EPA should be in a form containing the same number of significant digits as the MCL, the results were rounded to one significant digit. The last significant digit was increased by one unit if the digit dropped was a 5, 6, 7, 8, or 9; and was not altered if the preceding number was a 0, 1, 2, 3, or 4.

The system is in violation of the MCL because the "sum-of-the-fractions" is 7 mrem, which means that the sum of the annual dose equivalent to the total body, or to any internal organ, exceeds 4 mrems/year.

From: EPA Implementation Guidance for Radionuclides, Page II-2 @ https://nepis.epa.gov/Exe/ZyPDF.cgi/P1009DJN.PDF?Dockey=P1009DJN.PDF

Exhibit B. Corrected version of Table A using Cs-134m; parent of Cs-134.

Emitter	(X) Lab Analysis (pCi/L)	(Y) Conversion from Table (pCi/4mrem)	(X/Y = A) Calculated Fraction	(A*4) Calculated Total mrem	Half-Life
Cs-134m	5,023	20,000	0.25115		2.908 hr
I-131	2	3	0.7		8.023 d
Cs-137	30	200	0.15		30.04 yr
Sr-90	4	8	0.5		28.79 yr
		Sum-of-the-Fractions	1.6015	7	.07 mSv/yr
Gross Beta	5,059 pCi/L	MCL Exceedance		3 mrem/yr	0.03 mSv/yr

[4] To determine compliance, each beta and photon emitter must be converted from pCi/L to millirems using the conversion tables listed in "***Maximum Permissible Body Burdens and Maximum Permissible Concentrations of Radionuclides in Air or Water for Occupational Exposure***" [National Bureau of Standards (NBS) Handbook 69 as amended August, 1963, U.S. Department of Commerce and/or ***Radionuclides in Drinking Water: A Small Entity Compliance Guide***; pg 13 @ https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=20001ZIN.txt]
ff

[5] Each Curie of ingested Alpha radiation delivers 20 times the atomic energy of a Curie of Beta or Photon radiation. One Joule per Kilogram = 1 Sievert (Sv) = 100 Rem
ff

Exhibit C. Modified version of Table B including time-dependant radioactive decay products.*

Parent Emitter	Lab Analysis of Parents (pCi/L)	Radioactive Decay Products	Calculated Fraction of Parent Activity Using Nucleonica
Cs-134m	5,023	Cs-134	1.58e-3 (after 10 hours of in-growth)
I-131	2	Xn-131m gas	7.29e-3 (after 10 days of in-growth)
Cs-137	30	Ba-137m	0.944 (after 20 min of in-growth)
Sr-90	4	Y-90	1.00 (after 20 days of in-growth)

Emitter	(X) Lab & Nucleonica Analysis (pCi/L)	(Y) Conversion from Table (pCi/4mrem)	(X/Y = A) Calculated Fraction	(A*4) Calculated Total mrem	Half-Life
Cs-134m	5,023	20,000	0.25115		2.908hr
Cs-134	7.94 (T=10 hr)	80	0.09925	0.397	2.065 yr
I-131	2	3	0.7		8.023 d
Xn-131m	0.0146 (T=10 days)	n/a	n/a	n/a	11.93 d
Cs-137	30	200	0.15		30.04 yr
Ba-137m	28.3 (T>20 min)	n/a	n/a	n/a	2.552 min
Sr-90	4	8	0.5		28.79 yr
Y-90	4 (T>20 days)	60	0.0667	0.2668	2.761 d
		Sum-of-the-Fractions	**>2.26495**	**>9**	**>0.09 mSv/yr**
Gross Beta	**5,071 pCi/L**	**MCL Exceedance**		**>9 mrem/yr**	**>0.09 mSv/yr**

* Decay product Activity & Half-Life values from tables @ www.gfxtechnology.com/1-Ci.pdf.

Exhibit D. Modified version of Table C corresponding to Water-PAG concentrations proposed by President Obama for I-131, Cs-137 & Sr-90, which excluded ingested radiation doses from their highly radioactive decay products: Xn-131m, Ba-137m & Y-90, respectively.

Emitter	Lab Analysis (pCi/L)	Radioactive Decay Products	Calculated Fraction of Parent Activity Using Nucleonica
Cs-134	5,023	None	n/a
I-131	10,350	Xn-131m gas	0.64e-3 (after 1 day of in-growth) 7.29e-3 (after 10 days of in-growth)
Cs-137	16,370	Ba-137m	0.944 (after 20 min of in-growth)
Sr-90	7,400	Y-90	1.00 (after 20 days of in-growth)

Emitter	(X) Lab Analysis (pCi/L)	(Y) Conversion from Table (pCi/4mrem)	(X/Y = A) Calculated Fraction	(A*4) Calculated Total mrem	Half-Life
Cs-134	n/a	20,000	n/a		2.908 hr
Cs-134m	n/a	80	n/a		2.065 yr
I-131	10,350	3	3,450		8.023 d
Xn-131m	75.5 (T=10 days)	n/a	n/a		11.93 d
Cs-137	16,570	200	82.85		30.04 yr
Ba-137m	15,642 (T>20 min)	n/a	n/a		2.552 min
Sr-90	7,400	8	925		28.79 yr
Y-90	7,400 (T>20 days)	60	123.3		2.761 d
		Sum-of-the-Fractions	**>4,581**	**>18,324**	**>183.24 mSv/yr**
Gross Beta	**57,438 pCi/L**	**MCL Exceedance**		**>18,320 mrem/yr**	**>183.2 mSv/yr**

Exhibit E. Nucleonica Analysis of 1-Ci of Sr-90

Nucleonica Results @ 20 Days Table A: Total & Beta Activity corresponding to Table D, Figs. 3 & 4		
Curve	Name	Activity (Ci)
	38 Sr90	0.9987
	39 Y90	0.9937
	40 Zr90 Stable	0
	Total:	1.992

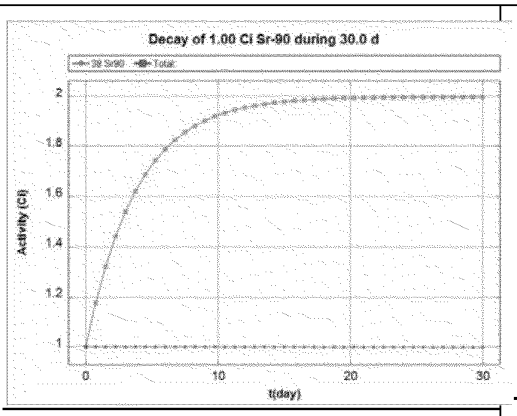


Fig. 2 Total Radioactivity produced by 1 Curie of Sr-90, a Beta Emitter; 0 to 30 days.

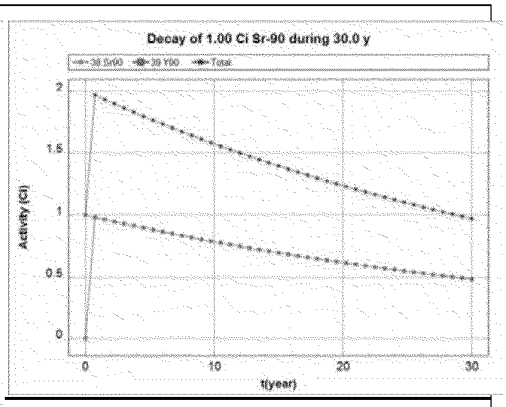


Fig. 3 Beta activity produced by 1 Curie of Sr-90; 0 to 30 years (1/2-Life = 27.9).

Table B: Radioactivity & atomic energy from 1-Curie of 30-day old Sr-90

ID	Nuclides	Half-Life	Decay Modes	N (Atoms)	Mass (g)	Mass Fractions	A (Ci)	A/ Aparent	A_α (Ci)	$A_{\beta\square}$ (Ci)	Energy (J)
1	38 Sr90	28.79 y	β-	4.84e+19	7.23e-3	0.998	0.998	1.00	0	0.998	8.38e+3
2	39 Y90	2.671 d	β-	1.23e+16	1.84e-6	2.53e-4	0.998	1.00	0	0.998	3.05e+4
3	40 Zr90	Stable		8.35e+16	1.25e-5	1.72e-3	0	0	0	0	0
	Total: 3			**4.85e+19**	**7.24e-3**	**1.00**	**1.99**	**2.00**	**0**	**1.99**	**3.89e+4**

Exhibit F. Nucleonica Analysis of 1-Ci of I-131

Nucleonica Results @ 12 hr Table A: Total & Beta Activity corresponding to Table B, Figs. 1 & 2		
Curve	Name	Activity (Ci)
	53 I131	0.9615
	54 Xe131 Stable	0
	54 Xe131 m	2.772e-4
	Total:	0.9618

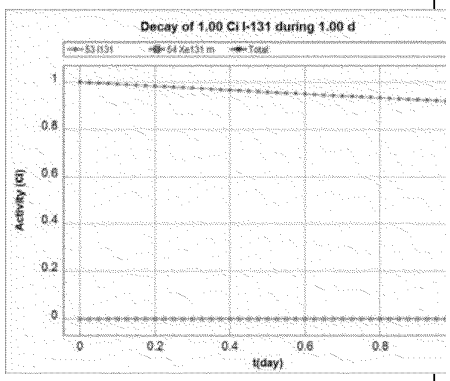
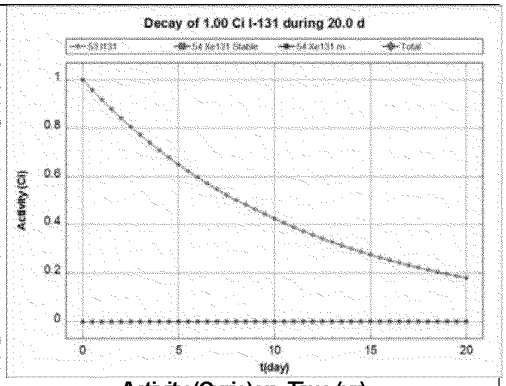


Fig. 1 Total Radioactivity produced by 1 Curie of I-131, a Beta Emitter; 0 to 1 day.



Activity (Curie) vs. Time (yr)

Fig. 2 Beta activity produced by 1 Curie of Cs-134; 0 to 20 day (1/2-Life = 8.0233 day).

Table B: Radioactivity & atomic energy 1-Curie of 1 day old I-131

ID	Nuclides	Half-Life	Decay Modes	N (Atoms)	Mass (g)	Mass Fractions	A (Ci)	A/ Aparent	A_α (Ci)	$A_{\beta\square}$ (Ci)	Energy (J)
1	53 I131	8.0233 d	β-; β-	3.39e+16	7.38e-6	0.918	0.917	1.00	0	0.917	475
2	54 Xe131	Stable		3.03e+15	6.59e-7	0.0819	0	0	0	0	0
3	54 Xe131 m	11.930 d	IT	3.23e+13	7.02e-9	8.73e-4	5.87e-4	6.40e-4	0	0	0.0253
	Total: 3			**3.70e+16**	**8.04e-6**	**1.00**	**0.919**	**1.00**	**0**	**0.916**	**476**

Exhibit G. Nucleonica Analysis of 1-Ci of Cs-134m

Nucleonica Results @ 1/2 hr Table A: Total & Beta Activity corresponding to Table B, Figs. 1 & 2		
Curve	Name	Activity (Ci)
	55 Cs134 m	0.8875
	55 Cs134	1.808e-5
	Total:	0.8875

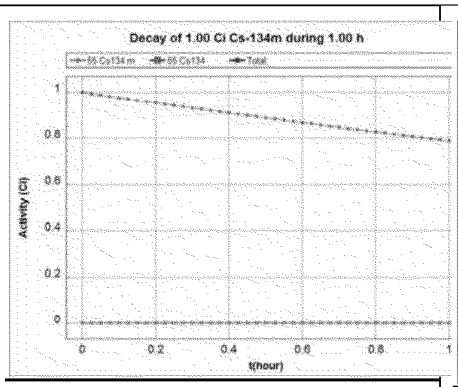


Fig. 1 Total Radioactivity produced by 1 Curie of Cs-134m, a Beta Emitter; 0 to 1 Hour.

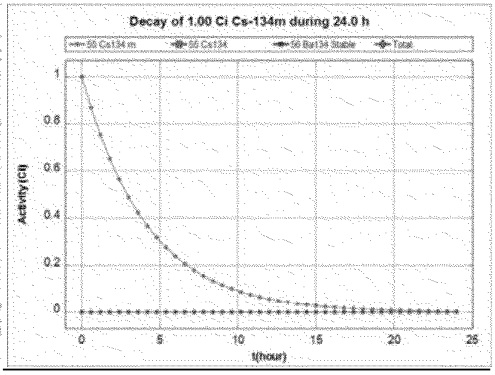


Fig. 2 Beta activity produced by 1 Curie of Cs-134m; 0 to 1 day (1/2-Life = 2.908 hr).

Table B: Radioactivity & atomic energy 1-Curie of 1 day old Cs-134m.

ID	Nuclides	Half-Life	Decay Modes	N (Atoms)	Mass (g)	Mass Fractions	A (Ci)	A/ Aparent	A_α (Ci)	$A_{\beta\square}$ (Ci)	Energy (J)
1	55 Cs134 m	2.908 h	IT	1.83e+12	4.07e-10	3.28e-3	3.28e-3	1.00	0	0	12.4
2	55 Cs134	2.0651 y	β-; ec	5.57e+14	1.24e-7	0.998	1.60e-4	0.0488	0	1.60e-4	0.140
3	56 Ba134 Stable	Stable		4.24e+11	9.43e-11	7.60e-4	0	0	0	0	0
	Total: 3			**5.59e+14**	**1.24e-7**	**1.00**	**3.43e-3**	**1.05**	**0**	**1.60e-4**	**12.5**

Exhibit H. Nucleonica Analysis of 1-Ci of Cs-134

Nucleonica Results @ 12 hr Table A: Total & Beta Activity corresponding to Table B, Figs. 1 & 2		
Curve	Name	Activity (Ci)
	55 Cs134	0.9995
	56 Ba134 Stable	0
	Total:	0.9995

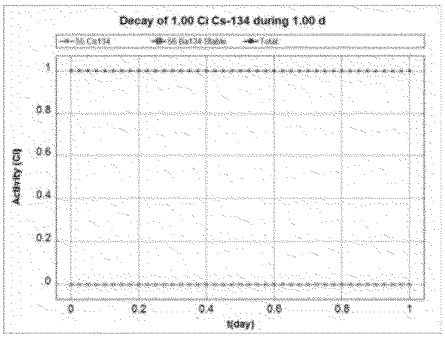
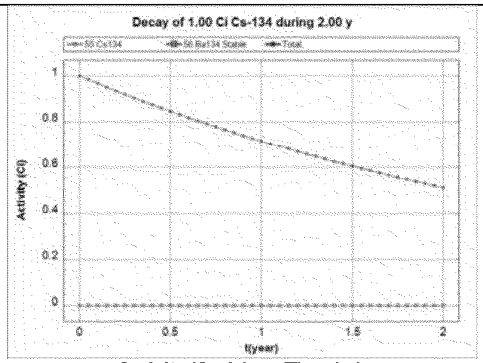


Fig. 1 Total Radioactivity produced by 1 Curie of Cs-134, a Beta Emitter; 0 to 1 day.



Activity (Curie) vs. Time (yr)

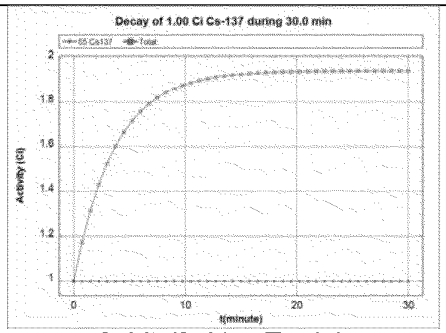
Fig. 2 Beta activity produced by 1 Curie of Cs-134; 0 to 2 yr (1/2-Life = 2.065 yr).

Table B: Radioactivity & atomic energy 1-Curie of 1 day old Cs-134.

ID	Nuclides	Half-Life	Decay Modes	N (Atoms)	Mass (g)	Mass Fractions	A (Ci)	A/ Aparent	A_α (Ci)	$A_{\beta\square}$ (Ci)	Energy (J)
1	55 Cs134	2.0651 y	β-; ec	3.48e+18	7.73e-4	0.998	0.999	1.00	0	0.999	1.05e+3
2	56 Ba134	Stable		3.20e+15	7.10e-7	9.18e-4	0	0	0	0	0
	Total: 2			**3.48e+18**	**7.74e-4**	**1.00**	**1.00**	**1.00**	**0**	**1.00**	**1.05e+3**

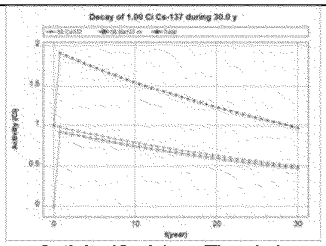
Exhibit I. Nucleonica Analysis of 1-Ci of Cs-137

Nucleonica Results @ 20 Minutes		
Table A: Total & Beta Acctivity corresponding to Table B, Figs. 1 & 2		
Curve	Name	Activity (Ci)
	55 Cs137	1.000
	56 Ba137 m	0.9398
	56 Ba137 Stable	0
	Total:	1.940



Activity (Curie) vs. Time (yr)

Fig. 1 Total Radioactivity produced by 1 Curie of Cs-137, a Beta Emitter; 0 to 30 minutes (1/2-Life = 30.03 yr).



Activity (Curie) vs. Time (yr)

Fig. 2 Beta activity produced by 1 Curie of Cs-137; 0 to 30 yr (1/2-Life = 30.03 yr).

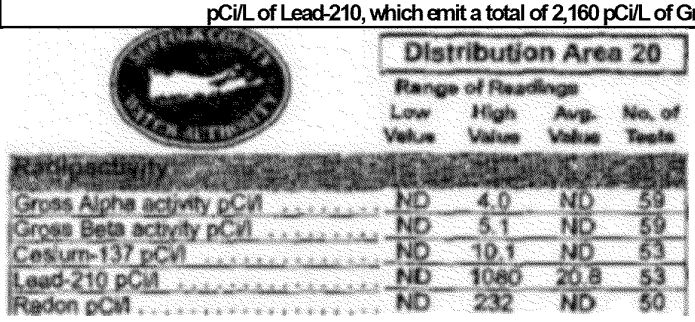
Table B: Radioactivity & atomic energy 1-Curie of 30-minute old C-137

ID	Nuclides	Half-Life	Decay Modes	N (Atoms)	Mass (g)	Mass Fractions	A (Ci)	A/ Aparent	A_α (Ci)	A_β (Ci)	Energy (J)
1	55 Cs137	30.04 y	β-; β-	5.06e+19	0.0115	1.00	1.00	1.00	0	1.00	5.88
2	56 Ba137 m	2.552 m	IT	7.71e+12	1.75e-9	1.52e-7	0.944	0.944	0	0	5.85
3	56 Ba137	Stable		5.89e+13	1.34e-8	1.16e-6	0	0	0	0	0
	Total: 3			**5.06e+19**	**0.0115**	**1.00**	**1.94**	**1.94**	**0**	**1.00**	**11.7**

Table C: Falsified Gross Beta test results from the 2002 Water Quality Report; Table 31 @ http://www.gfxtechnology.com/Radon.html [1] [2]

Component	Low Value	High Value	Avg. Value	Number of Tests
Gross Alpha Activity pci/l	ND	1.5	ND	9
Gross Beta Activity pci/l	ND	2.0	ND	9
Cesium-137 pci/l	ND	10.1	ND	9
Lead-210 pci/l	ND	ND	ND	9
Radon	NA	NA	NA	0

Table C: The excerpt below is from the 2003 water quality report by the Suffolk County Water Authority (SCWA) and shows 232 pCi/L Alpha activity from Radon-222, but only 4.0 pCi/L Alpha activity from Rn-222, Po-210, Po-214 & Po-218 & only 5.1 pCi/L of of Gross Beta from 10.1 pCi/L of Cs-137 & 1,080 pCi/L of Lead-210, which emit a total of 2,160 pCi/L of Gross Beta & 1,080 of Polonium-210; far above is MCL.



Distribution Area 20

Radioactivity	Range of Readings Low Value	High Value	Avg. Value	No. of Tests
Gross Alpha activity pCi/l	ND	4.0	ND	59
Gross Beta activity pCi/l	ND	5.1	ND	59
Cesium-137 pCi/l	ND	10.1	ND	53
Lead-210 pCi/l	ND	1080	20.8	53
Radon pCi/l	ND	232	ND	50

NOTES

[1] Tables A & Fig. 1 indicate the total Beta Activity produced by one Curie of Cs-137 grows to 1.94 Curies in less than 20 minutes after being dissolved in water. Table B & Fig. 2 show it takes about 30 years for the total Beta activity to reach the initial activity of Cs-137. Therefore the Gross Beta activity reported by the SCWA should have been 1.94 x 10.1 = 19.6 pCi/L not 2.0 pCi/L.

[2] The SCWA's RAILROAD AVE well field is located south of the BNL & Grumman Superfund sites. It had 2 wells ##S-32359, S-81473 located in Center Moriches in 2001; SCWA Distribution Area # 20 in 2002 serving: Mastic, Mastic Beach, Moriches, North Shirley, Ridge, Shoreham, South Manor, South Ridge & Westhampton Beach with radioactive water.

To: Christ, Lisa[Christ.Lisa@epa.gov]
From: Burneson, Eric
Sent: Wed 12/14/2016 1:31:51 PM
Subject: FW: Drinking Water PAG
TPs Rads PAG for Drinking Water.docx

FYI

From: Beauvais, Joel
Sent: Tuesday, December 13, 2016 9:42 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>; Campbell, Ann <Campbell.Ann@epa.gov>; Grevatt, Peter <Grevatt.Peter@epa.gov>
Subject: Re: Drinking Water PAG

Thanks - can you unpack the statement below for me a bit? Who is driving OMB's position? NRC?

- We believe that it is appropriate for purposes of the guidance to assume that the source of contamination would not be quickly controlled and that radionuclide levels in drinking water would not naturally decay.

From: Burneson, Eric
Sent: Tuesday, December 13, 2016 6:27 PM
To: Beauvais, Joel; Campbell, Ann; Grevatt, Peter
Subject: RE: Drinking Water PAG

Attached for your review and consideration are some talking points on this.

From: Beauvais, Joel
Sent: Tuesday, December 13, 2016 5:27 PM
To: Campbell, Ann <Campbell.Ann@epa.gov>; Grevatt, Peter <Grevatt.Peter@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>
Subject: Re: Drinking Water PAG

Oops plus Eric

On Dec 13, 2016, at 5:26 PM, Beauvais, Joel <Beauvais.Joel@epa.gov> wrote:

Btw Peter/Eric it would be helpful to get TPs re what OMB is seeking and our response.

On Dec 13, 2016, at 5:24 PM, Beauvais, Joel <Beauvais.Joel@epa.gov> wrote:

FYI - I'll try to connect with Crystal on this tomorrow am

Begin forwarded message:

From: "Johnson, Katie B. B. EOP/OMB" <Katherine_B_Johnson@omb.eop.gov>
Date: December 13, 2016 at 5:20:51 PM EST
To: "Beauvais, Joel EOP" <beauvais.joel@epa.gov>
Cc: "Vaught, Laura" <Vaught.Laura@epa.gov>
Subject: RE: Drinking Water PAG

So we brought this up and Howard wants to discuss it with you directly. I think Carl will reach out to try and schedule something tomorrow am. If he doesn't just have your assistant email him.

From: Beauvais, Joel [mailto:Beauvais.Joel@epa.gov]
Sent: Tuesday, December 13, 2016 1:43 PM
To: Johnson, Katie B. B. EOP/OMB <Katherine_B_Johnson@omb.eop.gov>
Cc: Vaught, Laura <Vaught.Laura@epa.gov>
Subject: RE: Drinking Water PAG

K thx

From: Johnson, Katie B. B. EOP/OMB
[mailto:Katherine_B_Johnson@omb.eop.gov]
Sent: Tuesday, December 13, 2016 1:35 PM
To: Beauvais, Joel <Beauvais.Joel@epa.gov>
Cc: Vaught, Laura <Vaught.Laura@epa.gov>
Subject: RE: Drinking Water PAG

Hey – we are talking to Howard about this at 2:00 PM about this so should have a more robust update after that.

From: Beauvais, Joel [mailto:Beauvais.Joel@epa.gov]
Sent: Tuesday, December 13, 2016 12:02 PM
To: Johnson, Katie B. B. EOP/OMB <Katherine_B_Johnson@omb.eop.gov>
Cc: Vaught, Laura <Vaught.Laura@epa.gov>
Subject: Drinking Water PAG

Hi, Katie – I know you're swamped, but just checking in on where things stand on this, as I need to circle back with the Administrator on it.

Joel

To: Christ, Lisa[Christ.Lisa@epa.gov]
Cc: Burneson, Eric[Burneson.Eric@epa.gov]; Huff, Lisa[Huff.Lisa@epa.gov]
From: Flaharty, Stephanie
Sent: Mon 12/12/2016 2:23:55 PM
Subject: FW: CMS Reassignment Request Approved - StephanieN Brown - AX-17-000-1597

Lisa,

Reassigned to OLEM...

Thanks,
Steph

-----Original Message-----
From: cmsadmin@epa.gov [mailto:cmsadmin@epa.gov]
Sent: Monday, December 12, 2016 8:35 AM
To: Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>
Subject: CMS Reassignment Request Approved - StephanieN Brown - AX-17-000-1597

Your reassignment request has been approved on 12/12/16 8:35 AM by StephanieN Brown. Please go to the CMS webpage to view the details of the control.

Summary Information -
Control Number: AX-17-000-1597
Control Subject: PAGs & US EPA Finished Drinking Water 900 Method being used on raw untreated water suspected of containing radiation
From: Borello, Chris

Note: This Email was automatically generated. Please do not attempt to respond to it. You can access this control at https://cms.epa.gov/cms. Questions or comments concerning CMS should be directed to CMS Support at 202-564-4985 or CMS Information@epa.gov.

To: Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]
Cc: Christ, Lisa[Christ.Lisa@epa.gov]
From: Ellis, Jerry
Sent: Thur 12/8/2016 10:44:33 PM
Subject: Draft Action Memo
DW PAG Action Memo to Administrator 12-7-16.docx

Sam,

I highlighted some text that I would like to speak with you about. Just want to verify the information.

Jerry L. Ellis, Jr. – Environmental Scientist

Quality Assurance Officer

Office Phone: 202-564-2766

Office of Ground Water and Drinking Water

U.S. Environmental Protection Agency

1200 Pennsylvania Ave. (4607M), N.W.

Washington, D.C. 20460

To: Christ, Lisa[Christ.Lisa@epa.gov]; Huff, Lisa[Huff.Lisa@epa.gov]
Cc: Burneson, Eric[Burneson.Eric@epa.gov]; Oshida, Phil[Oshida.Phil@epa.gov]; Greene, Ashley[Greene.Ashley@epa.gov]
From: Flaharty, Stephanie
Sent: Thur 12/8/2016 7:04:14 PM
Subject: CMS New Assignment - PAGs & DW 900 Method - AX-17-000-1597
17-000-1597.Borello.PAGs.pdf

Hello,

The attached control AX-17-000-1597 has been assigned to your office. The direct reply (at the DD level) is due December 15th.

Summary Information -
Control Number: AX-17-000-1597
Control Subject: PAGs & US EPA Finished Drinking Water 900 Method being used on raw untreated water suspected of containing radiation
From: Borello, Chris

Thanks,
Steph

To: Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]; Christ, Lisa[Christ.Lisa@epa.gov]; Wieder, Jessica[Wieder.Jessica@epa.gov]; Nesky, Anthony[Nesky.Tony@epa.gov]; White, Rick[White.Rick@epa.gov]; Snead, Kathryn[Snead.Kathryn@epa.gov]; Saltman, Tamara[Saltman.Tamara@epa.gov]
From: DeCair, Sara
Sent: Wed 12/7/2016 9:19:51 PM
Subject: Inside EPA articles on PAGs, dated Nov. 5

Busy times over at Inside EPA – two articles on PAGs in one day --

From: Walker, Stuart
Sent: Wednesday, December 07, 2016 3:50 PM
To: Woolford, James <Woolford.James@epa.gov>; Stalcup, Dana <Stalcup.Dana@epa.gov>
Cc: Scozzafava, MichaelE <Scozzafava.MichaelE@epa.gov>; Fitz-James, Schatzi <Fitz-James.Schatzi@epa.gov>; Gartner, Lois <Gartner.Lois@epa.gov>
Subject: RE: PAGS

This article and link to the NY AG letter also make for interesting reading

https://insideepa.com/sites/insideepa.com/files/documents/dec2016/epa2016_2535.pdf

Daily News

New York AG Office Urges White House To Reject Water Radiation Guide

December 05, 2016

The New York attorney general's (AG) office is urging the White House to reject a proposed EPA guidance that would set protective drinking water levels for radiological emergencies far in exceedance of Safe Drinking Water Act (SDWA) limits, even as EPA Administrator Gina McCarthy is defending the pending guide and arguing its reach is limited to temporary situations.

The White House Office of Management and Budget (OMB) is reviewing a drinking water chapter slated for inclusion in EPA's protective action guides (PAGs) for radiological emergencies. The agency plans to insert the chapter into an updated PAG manual that McCarthy signed Dec. 1.

EPA chose to finalize the manual now without the drinking water chapter, but says in a notice that it still plans to finalize the drinking water guidance and intends to add it into the "Intermediate Phase" chapter of the manual and reissue the manual once complete.

The pending drinking water amendments would largely weaken acceptable radiological concentrations allowed in drinking water months or years after a radiological emergency, and dozens of environmental groups have called for the amendments' withdrawal. In addition, several environmental groups in a Nov. 30 letter appealed to McCarthy to meet once again with them to reconsider the water amendments, arguing the draft version “would upend decades of clean water protections.”

An EPA Radiation and Indoor Air Office official, Sara DeCair, told EPA's Clean Air Act Advisory Committee (CAAAC) Dec. 1 that the drinking water amendments are in line to be finalized but gave the caveat that there are no guarantees that will occur under the current administration.

Echoing some of the criticisms levied by environmentalists, the New York AG's office is appealing to OMB to scrap the drinking water guide or alternatively, to send it back to EPA to be reworked, after the agency did not respond to concerns the state raised directly to EPA officials.

While the draft guidance purports to set acceptable radiation levels in public drinking water supplies following a radiological incident, it "advances a much less protective standard for drinking water interdiction than is set forth in existing EPA guidance and in EPA regulations promulgated under [SDWA]," a Nov. 21 letter from New York Assistant AGs Joshua M. Tallent and John J. Sipos says. The letter was sent to OMB Office of Information and Regulatory Affairs (OIRA) Administrator Howard Shelanski.

Potential Exposure

"Because it would substantially, indefinitely, and unjustifiably increase New Yorkers' exposure to radioactive contamination in drinking water in the aftermath of a potential radiological incident, the State of New York Office of the Attorney General strongly urges that OIRA either disapprove the draft guidance now under review or, in the alternative, return the guidance to the EPA for further consideration," the assistant AGs say.

A spokesman for New York Attorney General Eric Schneiderman says he cannot comment on whether the AG's office is considering the possibility of litigation over the PAGs, if EPA issues them without changes.

But McCarthy in response to a question asked during a Nov. 21 National Press Club speech she gave defended the draft water PAG, noting it is to be applied to temporary situations. She stressed that the agency is not altering its drinking water standards, and said the guide applies to a transitional period that would permit exposures temporarily that "would allow life to continue but not present a hazard to those individuals."

"[W]e are providing the best information we can in those transition days, not sending a signal that we think that those numbers should be the standard for drinking water. It clearly shouldn't be," she said at the Washington, D.C., event.

McCarthy said the guide grew out of the 2011 Fukushima, Japan, nuclear power plant accident, where she said people were left not knowing what to do in the aftermath. The larger PAG manual in which the water amendments are slated to be inserted has long been needed by states, according to McCarthy. She said "states have been driven crazy because it's been years since anyone updated [the overall PAG manual] and because they know that we have more at issue now in terms of radiation."

DeCair in slides she presented to the CAAAC indicated that the agency in response to comments revised the draft PAGs to describe "how conservative PAGs levels are" and to further stress "how environmental standards are not changing because of this guidance."

Two-Tiered Approach

In the draft water amendments, EPA proposed a two-tiered approach that would provide more protective exposure levels for sensitive populations than the general population but would still allow radioactivity in drinking water at orders of magnitude beyond SDWA limits for radionuclides.

The amendments would deem protective action dose levels of 500 millirems/year (mrem/yr) in the first year after an incident for the general population, and 100 mrem/yr in the first year for infants, children age 15 and under, and pregnant or nursing women, according to a notice of availability for the draft drinking water PAG. The safety levels would be for emergency management officials to apply in the intermediate phase period after a radiological emergency -- which EPA has at times defined as up to one year but in other cases up to several years after an incident.

Among its criticisms of EPA's draft water PAG, the New York AG's office takes issue with the time period of exposure that citizens near a radiological incident could be subjected to.

The protective action thresholds in the water PAG are meant for use during what is called the intermediate phase of a radiological incident response, which means after the immediate release has been put under control but prior to a large-scale cleanup, the letter notes. In effect, the draft PAGs "create a variance of indeterminate duration from Safe Drinking Water Act standards," it says. This could allow emergency officials to permit citizens to be exposed to levels far exceeding SDWA limits for many months or even years after an incident, it says.

The state AG says what is especially troubling is the agency's "apparent abandonment of the organ dose-based radiation exposure measurement used in the [SDWA maximum contaminant levels (MCLs)] in favor of a measure of exposure expressed as 'committed effective dose.'" EPA in the water PAG does not explain its rationale for the shift in methodology, but due to this change, the water PAG substantially understates "the increase in radionuclide concentrations allowable under the proposed PAGs over [SDWA] levels," it says. For example, EPA would allow a 3,450-fold rise in the maximum allowable concentration of iodine-131, it says.

'Effective Dose'

In the past, EPA has rejected "effective dose" as understating cancer risk, the state AG notes. "Inexplicably, the EPA seems to have adopted PAGs that could expose the public to levels of cancer risk far in excess of what the agency itself considers the maximum acceptable risk threshold," it says.

The state AG also questions EPA's release of "derived response levels" -- the allowable concentrations of each radionuclide in drinking water that correspond to EPA's PAG levels -- for just three of the 100 radionuclides that EPA believes may be found in drinking water systems following an incident.

The complaint echoes concerns voiced by environmentalists who have sued the agency under a Freedom of Information Act lawsuit to obtain the derived response levels for the other radionuclides. Without this data, the state and the public cannot "plausibly evaluate the protectiveness" of the agency's PAGs, the state AG says.

On the procedures side, the state AG also asks OIRA to reevaluate its apparent finding that the water PAG is not a "significant regulatory action," arguing against EPA's label that the PAGs are a nonbinding document.

"[T]he agency clearly intends and expects that federal, state, and local emergency planners will incorporate the draft PAGs into their planning protocols

for use in the event of a radiological emergency," the letter says. Further, EPA's regulatory action could have significant adverse economic, agriculture, homeland security, healthcare and public health and safety impacts, it contends.

Therefore, OIRA should treat the water PAG as a significant regulatory action, subjecting it to the level of review required for such actions, it says. As part of that review, OIRA should scrutinize whether EPA has scientific justification for its claim that the water PAG is within the cancer risk range found in SDWA's MCLs, it says. -- *Suzanne Yohannan* (syohannan@iwpnews.com)

From: Woolford, James
Sent: Tuesday, December 06, 2016 8:24 AM
To: Stalcup, Dana <Stalcup.Dana@epa.gov>
Cc: Scozzafava, MichaelE <Scozzafava.MichaelE@epa.gov>; Walker, Stuart <Walker.Stuart@epa.gov>; Fitz-James, Schatzi <Fitz-James.Schatzi@epa.gov>; Gartner, Lois <Gartner.Lois@epa.gov>
Subject: PAGS

EPA Finalizes Radiological Manual With 1992 Levels Despite Updated Science

December 05, 2016

EPA has quietly released a final guide for responding to radiological incidents, expanding the guide's reach while maintaining many of the protective action levels set in 1992, despite newer scientific findings EPA has adopted for other applications that one environmentalist radiation expert says should have led the agency to set stricter levels.

EPA Administrator Gina McCarthy Dec. 1 signed a notice making available the final Protective Action Guides (PAGs) and Planning Guidance for Radiological Incidents, commonly known as the PAG Manual. The manual revises a 1992 version and sets radiological protection criteria for federal, state, local and tribal emergency response officials to use in a wide variety of incidents involving a radiological release.

The agency chose to finalize the manual now without a highly controversial

drinking water chapter that is still under interagency review at the White House Office of Management & Budget (OMB). EPA in the notice says it plans to eventually add the drinking water section to the "Intermediate Phase" chapter of the manual and then reissue the PAG manual. Environmentalists and the New York's attorney general's office have been severely critical of the draft drinking water chapter and have urged EPA to scrap it.

The guidance outlines three radiological incident phases for which it makes protective action recommendations. These are the early phase, the intermediate phase and the late phase. In the early phase, EPA calls for sheltering-in-place or evacuating the public if radioactive levels reach between 1 and 5 roentgen equivalent man (rem) -- a conventional unit used for equivalent dose -- over a four day period following the incident. It also calls for supplementary administration of potassium iodide as a thyroid blocking agent per the latest guidance from the Food & Drug Administration if a child is subjected to 5 rem in the early phase of exposure -- hours to days.

In the intermediate phase, the PAG calls for relocating the public if the projected dose is equal to or greater than 2 rem in the first year, and 0.5 rem in the second and subsequent years. It also includes additional protective dose recommendations depending on food exposures or other circumstances.

For cleanup and waste disposal in the late phase, the manual includes brief guidance for planning the cleanup process and the disposal of radioactive waste, EPA says in a fact sheet issued with the guide.

EPA has expanded the breadth of the guidance from the 1992 version, saying the protective actions described in the manual now apply to a wide range of incidents, although generally to those involving significant radioactive releases. These incidents include nuclear weapons complex or nuclear power plant accidents, a fire in a nuclear fuel manufacturing plant, transportation accidents involving radioactive material or terrorist acts involving a radiological dispersal device.

Questionable Authority

The environmentalist questions the need for such a guidance when the Superfund law already contains authorities to respond to releases, including emergencies. "[D]espite their rote claims to the contrary," the PAG manual undercuts the Superfund law, the source says.

The source says EPA seems "to admit the problem a bit" in a footnote, suggesting it may lack legal authority to issue the PAGs. The source points to a

footnote not included in the draft PAG manual, and now repeated throughout the final that the source says effectively indicates the agency lacks the "legal basis to do any of this." In the footnote to a section on cleanup under the late phase, EPA notes that "this cleanup process does not rely on and does not affect any authority, including the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), . . . and the National Contingency Plan (NCP)."

It goes on to say: "This document expresses no view as to the availability of legal authority to implement this process in any particular situation."

EPA is stressing that the PAG manual is non-binding, and does not set legal radiation limits or supersede environmental laws or regulations.

In the notice, which in part responds to comments critical of the draft, EPA says the levels established in the manual "are intended to be used only in an emergency when radiation levels have already exceeded environmental standards and could be high enough to cause health effects unless protective actions are taken." The agency contends that PAGs are meant to prevent adverse health impacts by triggering public safety measures such as evacuation and to minimize "unnecessary exposures."

The notice continues, "The PAGs are set at a level where the health risk from radiation exposure that could be avoided with protective action outweighs the risk associated with taking the safety measures, e.g., traffic accidents, trips and falls or anxiety associated with dislocation or the separation of family members."

In response to criticism from environmental groups that the PAGs would not be stringent enough, EPA contends that "[t]here is an abundant conservatism built into the derivation of the PAGs, and into the assumptions used to generate derived response levels, to ensure that the PAGs are appropriate emergency guides for all members of the public, including sensitive subpopulations."

Weaker Standards

But the environmentalist says EPA has effectively weakened the standards, and notes that the details in the manual contradict claims made in the notice and fact sheet.

EPA in the fact sheet says the manual "includes dose calculations based on the latest science." But the source says, "What stunned me is it's exactly the opposite."

The manual says that most of the PAGs and related actions remain unchanged

from the 1992 manual. For instance in its basis for early phase PAGs, EPA references Biological Effects of Ionizing Radiation (BEIR) III, which are now out-of-date cancer and non-cancer risk estimates from exposure to low-level ionizing radiation issued by the National Academy of Sciences (NAS). The source points out that EPA has since adopted more recent NAS findings -- BEIR V and VII -- that show risks are greater than previously estimated for the same level of radiation received. Therefore, the new science shows that levels should be more stringent, the source argues.

This new document contains essentially the same levels as the 1992 document, and is based on science from the 1970s, at the same time EPA is saying it is based on new science, the source says.

Further, EPA weakened the 1992 manual by eliminating certain evacuation requirements triggered when skin and thyroid doses exceed certain levels, the source says. Also, it eliminates a PAG for the intermediate phase that called for relocation if it was projected that the population would accumulate exposure at 5 rem over a 50-year period. EPA in the manual says this was removed for simplicity. The 50-year relocation PAG "is rarely, if ever, the driver for extending a relocation area beyond that prompted by the first or second year relocation PAGs in scenarios that have been analyzed."

In addition, the manual says that "dose projections over 50 years after a radiological incident for various age groups show no significant differences for individuals exposed at 3 months of age versus adult."

The fact sheet also contradicts the manual on the time interval for the intermediate phase, with the former saying it will last weeks to months, while the details included in the manual, including a table that specifies PAG levels, indicate this time period could last up to several years. -- *Suzanne Yohannan* (syohannan@iwpnews.com)

Related News | Toxics | Waste | Water |

196953

Jim Woolford, Director

Office of Superfund Remediation and Technology Innovation

Office of Land and Emergency Management

US Environmental Protection Agency

1200 Penn. Ave., NW

Washington, DC 20460

(Mail Code 5201-P)

Our mission is to return the most contaminated areas of country to communities for safe reuse in a healthy environment.

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Physically located at:

Room 5622

One Potomac Yard (South)
2777 S. Crystal Dr.
Arlington, VA 22202

To: Christ, Lisa[Christ.Lisa@epa.gov]
From: Hernandez-Quinones, Samuel
Sent: Tue 12/6/2016 3:02:31 PM
Subject: FW: Records #2
FW: Material for 11/4 and 11/5 PAG briefings
Materials for DA briefing on Water PAG
Re: TD for WA 2-09, EP-C-12-023
Memo - Drinking Water PAGs Based on Doses to Critical Organs - 4-30-15docx.docx
Spreadsheet for tomorrow's webinar on drinking water PAG DRL derivation
For Monday: Check our water math

From: Hernandez-Quinones, Samuel
Sent: Tuesday, November 22, 2016 12:46 PM
To: Kelly, Lynn <Kelly.Lynn@epa.gov>
Subject: Records #2

Attached

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water

Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

To: Grevatt, Peter[Grevatt.Peter@epa.gov]; Mclain, Jennifer[Mclain.Jennifer@epa.gov]; Burneson, Eric[Burneson.Eric@epa.gov]; Oshida, Phil[Oshida.Phil@epa.gov]; Christ, Lisa[Christ.Lisa@epa.gov]; Greene, Ashley[Greene.Ashley@epa.gov]; Wadlington, Christina[Wadlington.Christina@epa.gov]
From: Flaharty, Stephanie
Sent: Tue 12/6/2016 12:15:15 PM
Subject: Inside EPA: EPA Finalizes Radiological Manual With 1992 Levels Despite Updated Science

EPA Finalizes Radiological Manual With 1992 Levels Despite Updated Science

December 05, 2016

EPA has quietly released a final guide for responding to radiological incidents, expanding the guide's reach while maintaining many of the protective action levels set in 1992, despite newer scientific findings EPA has adopted for other applications that one environmentalist radiation expert says should have led the agency to set stricter levels.

EPA Administrator Gina McCarthy Dec. 1 signed a notice making available the final Protective Action Guides (PAGs) and Planning Guidance for Radiological Incidents, commonly known as the PAG Manual. The manual revises a 1992 version and sets radiological protection criteria for federal, state, local and tribal emergency response officials to use in a wide variety of incidents involving a radiological release.

The agency chose to finalize the manual now without a highly controversial drinking water chapter that is still under interagency review at the White House Office of Management & Budget (OMB). EPA in the notice says it plans to eventually add the drinking water section to the “Intermediate Phase” chapter of the manual and then reissue the PAG manual. Environmentalists and the New York’s attorney general’s office have been severely critical of the draft drinking water chapter and have urged EPA to scrap it.

The guidance outlines three radiological incident phases for which it makes protective action recommendations. These are the early phase, the intermediate phase and the late phase. In the early phase, EPA calls for sheltering-in-place or evacuating the public if radioactive levels reach between 1 and 5 roentgen equivalent man (rem) -- a conventional unit used for equivalent dose -- over a four day period following the incident. It also calls for supplementary administration of potassium iodide as a thyroid blocking agent per the latest guidance from the Food & Drug Administration if a child is subjected to 5 rem in the early phase of exposure -- hours to days.

In the intermediate phase, the PAG calls for relocating the public if the projected dose is equal to or greater than 2 rem in the first year, and 0.5 rem in the second

and subsequent years. It also includes additional protective dose recommendations depending on food exposures or other circumstances.

For cleanup and waste disposal in the late phase, the manual includes brief guidance for planning the cleanup process and the disposal of radioactive waste, EPA says in a fact sheet issued with the guide.

EPA has expanded the breadth of the guidance from the 1992 version, saying the protective actions described in the manual now apply to a wide range of incidents, although generally to those involving significant radioactive releases. These incidents include nuclear weapons complex or nuclear power plant accidents, a fire in a nuclear fuel manufacturing plant, transportation accidents involving radioactive material or terrorist acts involving a radiological dispersal device.

Questionable Authority

The environmentalist questions the need for such a guidance when the Superfund law already contains authorities to respond to releases, including emergencies. "[D]espite their rote claims to the contrary," the PAG manual undercuts the Superfund law, the source says.

The source says EPA seems "to admit the problem a bit" in a footnote, suggesting it may lack legal authority to issue the PAGs. The source points to a footnote not included in the draft PAG manual, and now repeated throughout the final that the source says effectively indicates the agency lacks the "legal basis to do any of this." In the footnote to a section on cleanup under the late phase, EPA notes that "this cleanup process does not rely on and does not affect any authority, including the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), . . . and the National Contingency Plan (NCP)."

It goes on to say: "This document expresses no view as to the availability of legal authority to implement this process in any particular situation."

EPA is stressing that the PAG manual is non-binding, and does not set legal radiation limits or supersede environmental laws or regulations.

In the notice, which in part responds to comments critical of the draft, EPA says the levels established in the manual "are intended to be used only in an emergency when radiation levels have already exceeded environmental standards and could be high enough to cause health effects unless protective actions are taken." The agency contends that PAGs are meant to prevent adverse health impacts by triggering public safety measures such as evacuation and to minimize "unnecessary exposures."

The notice continues, “The PAGs are set at a level where the health risk from radiation exposure that could be avoided with protective action outweighs the risk associated with taking the safety measures, e.g., traffic accidents, trips and falls or anxiety associated with dislocation or the separation of family members.”

In response to criticism from environmental groups that the PAGs would not be stringent enough, EPA contends that “[t]here is an abundant conservatism built into the derivation of the PAGs, and into the assumptions used to generate derived response levels, to ensure that the PAGs are appropriate emergency guides for all members of the public, including sensitive subpopulations.”

Weaker Standards

But the environmentalist says EPA has effectively weakened the standards, and notes that the details in the manual contradict claims made in the notice and fact sheet.

EPA in the fact sheet says the manual “includes dose calculations based on the latest science.” But the source says, “What stunned me is it’s exactly the opposite.”

The manual says that most of the PAGs and related actions remain unchanged from the 1992 manual. For instance in its basis for early phase PAGs, EPA references Biological Effects of Ionizing Radiation (BEIR) III, which are now out-of-date cancer and non-cancer risk estimates from exposure to low-level ionizing radiation issued by the National Academy of Sciences (NAS). The source points out that EPA has since adopted more recent NAS findings -- BEIR V and VII -- that show risks are greater than previously estimated for the same level of radiation received. Therefore, the new science shows that levels should be more stringent, the source argues.

This new document contains essentially the same levels as the 1992 document, and is based on science from the 1970s, at the same time EPA is saying it is based on new science, the source says.

Further, EPA weakened the 1992 manual by eliminating certain evacuation requirements triggered when skin and thyroid doses exceed certain levels, the source says. Also, it eliminates a PAG for the intermediate phase that called for relocation if it was projected that the population would accumulate exposure at 5 rem over a 50-year period. EPA in the manual says this was removed for simplicity. The 50-year relocation PAG “is rarely, if ever, the driver for extending a relocation area beyond that prompted by the first or second year relocation PAGs in scenarios that have been analyzed.”

In addition, the manual says that “dose projections over 50 years after a radiological incident for various age groups show no significant differences for individuals exposed at 3 months of age versus adult.”

The fact sheet also contradicts the manual on the time interval for the intermediate phase, with the former saying it will last weeks to months, while the details included in the manual, including a table that specifies PAG levels, indicate this time period could last up to several years. -- *Suzanne Yohannan* (syohannan@iwpnews.com)

To: Christ, Lisa[Christ.Lisa@epa.gov]
Cc: Poy, Thomas[poy.thomas@epa.gov]; Grevatt, Peter[Grevatt.Peter@epa.gov]
From: Bair, Rita
Sent: Thur 12/1/2016 7:11:16 PM
Subject: Radioactivity PAG
Control Slip - (AX-17-000-1597).pdf
Control Attachment - 1 (AX-17-000-1597).pdf

Lisa, We received a Controlled Correspondence addressed to the Administrator (attached). Even though the request is from the President of the Concerned Citizens of Lake Twp Uniontown IEL Superfund site, Ohio in our Region, their main point is they want USEPA to not sign off on the PAG and to issue a change in policy before the Administration ceases and to prohibit allowing/prescribing/condoning the continued usage of the EPA-finished drinking water 900 Methods whenever raw, untreated water suspected of containing radiation is involved. Have you prepared responses to anything like this before? We want to have this re-controlled to OGWDW, but don't know if we will be successful with that. Any thoughts or input you can provide would be greatly appreciated.

To: Christ, Lisa[Christ.Lisa@epa.gov]
From: Hernandez-Quinones, Samuel
Sent: Thur 12/1/2016 2:06:56 PM
Subject: RE: NY Attny Gen DWPAG public comment letter
7-25-16 NY AG Comment Letter.pdf

Attached

Sam

From: Christ, Lisa
Sent: Thursday, December 01, 2016 8:24 AM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Subject: NY Attny Gen DWPAG public comment letter

Hi Sam,

Can you please send me the letter the NY attorney General provided during public comment on the draft DWPAG?

Thanks-

]Lisa

To: Plastino, Michael[Plastino.Michael@epa.gov]; Pham, Nhien[Pham.Nhien@epa.gov]; Barles, Robert[Barles.Robert@epa.gov]; Howard, Roger[Howard.Roger@epa.gov]
Cc: Christ, Lisa[Christ.Lisa@epa.gov]; Fort, Felecia[Fort.Felecia@epa.gov]
From: Wadlington, Christina
Sent: Wed 11/30/2016 2:35:22 PM
Subject: RE: R1 Radiation #1 FW: Radiation PAGS

Thanks Michael!

Bob/Roger, please let me know if you have any questions.

From: Plastino, Michael
Sent: Wednesday, November 30, 2016 9:34 AM
To: Wadlington, Christina <Wadlington.Christina@epa.gov>; Pham, Nhien <Pham.Nhien@epa.gov>; Barles, Robert <Barles.Robert@epa.gov>; Howard, Roger <Howard.Roger@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Fort, Felecia <Fort.Felecia@epa.gov>
Subject: RE: R1 Radiation #1 FW: Radiation PAGS

Christina,

Nhien is on leave until 12/7.

Bob Barles and Roger Howard will be acting on your requests.

I'll forward them the follow on emails and cc you.

Michael

Michael Plastino

Infrastructure Branch Chief | Office of Ground Water & Drinking Water (OGWDW)

Office of Water | USEPA | WJC-E 2145A | 202-564-0682 Desk | 202-603-7072 Mobile

From: Wadlington, Christina
Sent: Wednesday, November 30, 2016 8:34 AM
To: Pham, Nhien <Pham.Nhien@epa.gov>
Cc: Plastino, Michael <Plastino.Michael@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>
Subject: FW: R1 Radiation #1 FW: Radiation PAGS

Nhien,

If it's ok, can you send the below, along with my next email that will contain a batch, to the hotline?

Please have them respond using the talking points below. If they have additional questions, please feel free to let me know and I can provide additional information or coordinate with TAB.

Thank you!

•□□□□□□□□ During a radiological emergency, radioactive material could be released into water sources used by public water suppliers.

•□□□□□□□□ The purpose of EPA's Protective Action Guide for Radiological Incidents is to provide information to state and local officials, based on the best available science, to help inform their actions to protect public health in the event of such an emergency.

•□□□□□□□□ This guidance is non-regulatory and non-binding. The PAG does not affect EPA's Safe Drinking Water Act (SDWA) regulatory drinking water standards for radionuclides, which would continue to apply even in the event of an emergency. EPA expects that the responsible

party for any drinking water system adversely impacted during a radiation incident will take action to return to compliance with regulatory maximum contaminant levels.

•□□□□□□□□ State, local and other authorities can use the information in the PAG to inform plans and actions to protect residents from harmful effects from radiation in drinking water following a nationally significant emergency, such as a disaster at a nuclear power plant.

•□□□□□□□□ The PAG is intended for short term use only and is not intended for long-term (i.e. greater than one year) or everyday use.

•□□□□□□□□ The levels in the proposed PAG were calculated based on a maximum one-year exposure and are intended to provide a level of health protection roughly equivalent to that provided by applicable SDWA regulations for radiation, which are based on 70 years of exposure.

•□□□□□□□□ More information: https://www.epa.gov/radiation/protective-action-guides-pags#tab-1

From: N. Rice [mailto:hope247@sover.net]
Sent: Saturday, November 26, 2016 1:55 PM
To: Spalding, Curt <Spalding.Curt@epa.gov>
Subject: Radiation PAGS

Dear Administrator Spalding:

I am writing to urge you to act to prevent the watering down of the EPA PAGS that are supposed to protect the public from radiation exposure and any resulting adverse health effects. I am particularly concerned about the raising of the allowable limits for drinking water (by huge amounts) and in food and

eliminating limits on lifetime whole body radiation exposures. Also, radioactive waste must not be allowed to be dumped in municipal garbage dumps. as I understand is recommended in the proposed PAGS.

Please tell EPA Administrator Gina McCarthy that the PAGS for radiation must especially not be changed to allow enormous levels of invisible but deadly radioactive contamination to be permitted in drinking water for weeks, months or even years after a nuclear accident or "incident." As you must know, these new PAGs *are not* for the immediate phase after a radioactive release but for *the next phase*--which could last for years--when local residents may return home to contaminated water and not know the danger.

If changed as proposed, then in my opinion the EPA would be accomplices to allowing major public health problems in years to come, especially if there are accidents resulting from the transportation of radioactive waste by rail or truck to "interim" waste facilities as I believe the Dept. of Energy is promoting.

Sincerely,

Nancy Rice

To: Pham, Nhien[Pham.Nhien@epa.gov]
Cc: Plastino, Michael[Plastino.Michael@epa.gov]; Christ, Lisa[Christ.Lisa@epa.gov]
From: Wadlington, Christina
Sent: Wed 11/30/2016 1:35:14 PM
Subject: PAG inquiries batch email

Fwd: EPA regulations after radioactive incidents
Fwd: R1 Radiation #11 FW: PAGs
Fwd: R1 Radiation #10 FW: Protective Action Guides for Drinking Water
Fwd: R1 Radiation #9 FW: Drinking radioactive water is a serious threat to the public's health , safety and welfare.
Fwd: R1 Radiation #8 FW: DON'T DO IT!!
Fwd: R1 Radiation #7 FW: EPA radiation levels in drinking water
Fwd: R1 Radiation #6 FW: Allowed radiation levels in drinking water
Fwd: R1 Radiation #5 FW: Proposed PAG's for Drinking Water
Fwd: R1 Radiation #4 FW: PAG levels
Fwd: R1 Radiation #3 FW: For Ms. McCarthy's review: PAGs , radiation and EPA 900 Methods
Fwd: R1 Radiation #2 FW: radiation

As mentioned in my previous.

Thank you!

To: Wadlington, Christina[Wadlington.Christina@epa.gov]
Cc: Christ, Lisa[Christ.Lisa@epa.gov]; Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]
From: Burneson, Eric
Sent: Mon 11/28/2016 8:52:31 PM
Subject: Re: Reasons for EPS's pending approval of radiation levels for drinking water far higher than current levels?

Yes good to go

Sent from my iPhone

On Nov 28, 2016, at 3:24 PM, Wadlington, Christina <Wadlington.Christina@epa.gov> wrote:

Thanks Lisa. Eric ok to send?

From: Christ, Lisa
Sent: Monday, November 28, 2016 2:34 PM
To: Wadlington, Christina <Wadlington.Christina@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Subject: RE: Reasons for EPS's pending approval of radiation levels for drinking water far higher than current levels?

A few additions in red below

From: Wadlington, Christina
Sent: Monday, November 28, 2016 1:21 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>
Cc: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Subject: RE: Reasons for EPS's pending approval of radiation levels for drinking water far higher than current levels?

Lisa/Eric,

Updated with Joel's comments. Request your edits and/or comments.

During a radiological emergency, radioactive material could be released into the rivers, lakes, and streams used by public water suppliers. EPA will be finalizing guidance that authorities can use to protect residents from experiencing the harmful effects from radiation in drinking water following a nationally significant emergency, such as a disaster at a nuclear power plant. The purpose of EPA's Protective Active Guide (PAG) for Radiological Incidents is to guide planning and decision-making efforts by local and state officials. The guidance is non-regulatory and non-binding. It is intended for short term use and is not intended for long-term (e.g. greater than one year) or everyday use. The drinking water PAG levels were calculated based on a maximum 1-year exposure and provide a level of protection roughly equivalent to applicable NPDWRs for radiation, which are based on 70 years of exposure. The proposed PAG does not affect EPA's drinking water standards for radionuclides; water systems exceeding standards, regardless of the reason, are in violation. EPA expects that the responsible party for any drinking water system adversely impacted during a radiation incident will take action to return to compliance with Safe Drinking Water Act (SDWA) maximum contaminant levels as soon as practicable.

From: Burneson, Eric
Sent: Monday, November 28, 2016 1:09 PM
To: Wadlington, Christina <Wadlington.Christina@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Subject: FW: Reasons for EPS's pending approval of radiation levels for drinking water far higher than current levels?

FYI

From: Loop, Travis
Sent: Monday, November 28, 2016 1:03 PM
To: Beauvais, Joel <Beauvais.Joel@epa.gov>
Cc: Rupp, Mark <Rupp.Mark@epa.gov>; Grevatt, Peter <Grevatt.Peter@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>
Subject: RE: Reasons for EPS's pending approval of radiation levels for drinking water far higher than current levels?

Got it. Let me work with them on expanding the statement and run it back past you.

Travis Loop

Director of Communications
Office of Water

U.S. Environmental Protection Agency

202-870-6922

loop.travis@epa.gov

From: Beauvais, Joel
Sent: Monday, November 28, 2016 12:30 PM
To: Loop, Travis <Loop.Travis@epa.gov>
Cc: Rupp, Mark <Rupp.Mark@epa.gov>; Grevatt, Peter <Grevatt.Peter@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>
Subject: RE: Reasons for EPS's pending approval of radiation levels for drinking water far higher than current levels?

OK, I think we may need something that touches on the key messages: (1) these guidelines are non-binding advice for state, tribal and local governments and in no way affect the applicability or enforcement of SDWA regulations, including regulations for radionuclides; (2) these guidelines are intended for use in responding to major radiological events, and are intended for use only for short to intermediate term (days, weeks or months, but not longer than a year); (3) in developing the guidelines, EPA is focused on levels that will provide protection for short-term exposures similar to the protection against long-term exposures (up to 70 years), upon which the SDWA radionuclide regulations are based.

I'll work with OGWDW on something appropriate for use in response to these kinds of incomings.

Joel

From: Loop, Travis

Sent: Monday, November 28, 2016 12:23 PM
To: Beauvais, Joel <Beauvais.Joel@epa.gov>
Cc: Rupp, Mark <Rupp.Mark@epa.gov>
Subject: RE: Reasons for EPS's pending approval of radiation levels for drinking water far higher than current levels?

During a radiological emergency, radioactive material could be released into the rivers, lakes, and streams used by public water suppliers. EPA will be finalizing non-regulatory guidance that authorities can use to protect residents from experiencing the harmful effects from radiation in drinking water following an emergency. The purpose of EPA's Protective Active Guide (PAG) for Radiological Incidents is to guide planning and decision-making efforts by local and state officials. It is not intended for long-term or everyday use. The proposed PAG does not affect EPA's drinking water standards for radionuclides. Therefore, affected public water systems are expected to take actions to return to compliance with drinking water standards after a radiological emergency as soon as practicable.

https://www.epa.gov/radiation/protective-action-guides-pags#tab-1

Travis Loop

Director of Communications
Office of Water

U.S. Environmental Protection Agency

202-870-6922

loop.travis@epa.gov

From: Beauvais, Joel
Sent: Monday, November 28, 2016 12:22 PM
To: Loop, Travis <Loop.Travis@epa.gov>
Cc: Rupp, Mark <Rupp.Mark@epa.gov>
Subject: RE: Reasons for EPS's pending approval of radiation levels for drinking water far higher than current levels?

Can I see the language so I can provide directly to Judith?

From: Loop, Travis
Sent: Monday, November 28, 2016 8:04 AM
To: Beauvais, Joel <Beauvais.Joel@epa.gov>
Cc: Rupp, Mark <Rupp.Mark@epa.gov>
Subject: Re: Reasons for EPS's pending approval of radiation levels for drinking water far higher than current levels?

That language was provided to all PADs the week before last. But I will resend to R2.

Travis Loop

Communications Director for Water

U.S. Environmental Protection Agency

Phone: 202.870.6922

Follow us on Twitter @EPAwater

On Nov 28, 2016, at 7:43 AM, Beauvais, Joel <Beauvais.Joel@epa.gov> wrote:

> Yep thx
>
> On Nov 28, 2016, at 7:36 AM, Rupp, Mark <Rupp.Mark@epa.gov> wrote:
>
> > Hey, Joel. R2 continues to appear to be the only region raising ongoing concerns. If your team could draft a paragraph that Judith (and/or other interested regions) can use to respond to the advocacy emails she's been getting, that would be great.
> >
> > On Nov 25, 2016, at 10:37 PM, Enck, Judith <Enck.Judith@epa.gov> wrote:
> >
> > > I was unable to participate in the call and did get the read out from Javier. While I have concerns about the policy , the division directors were told this is all done. I don't know about other RA's but I have received some emails and a few days ago started receiving phone calls from residents innregion 2. It would be helpful to have a draft email to send in response
> > >
> > > Sent from my iPhone

On Nov 25, 2016, at 10:25 PM, Beauvais, Joel <Beauvais.Joel@epa.gov> wrote:

I gather you weren't able to make the WDD call on this earlier this week. I assume you've gotten the readout from Xavier but if you would like to discuss I'm happy to do so next week.

On Nov 25, 2016, at 10:20 PM, Enck, Judith <Enck.Judith@epa.gov> wrote:

Lots of incoming emails and now phone calls each day

Sent from my iPhone

Begin forwarded message:

From: Roxanne Warren <rwaa@erols.com>
Date: November 25, 2016 at 5:31:48 PM EST
To: 'judith Enck' <enck.judith@epa.gov>
Subject: Reasons for EPS's pending approval of radiation levels for drinking water far higher than current levels?

Dear Ms. Enck,

Please send me an explanation of why EPA Administrator Gina McCarthy is on the verge of approving radiation levels that are *hundreds and thousands of times higher than currently allowed* in drinking water and at cleaned up Superfund sites.

PAGs like this are mis-named "Protective" Action Guides for Drinking Water, since they *do not* protect the public from dangerous radioactivity. Rather, they protect the liability and profits of the energy company.

I would appreciate hearing from you on this subject.

Very truly yours,

Roxanne Warren, AIA

New York, NY 10025-1680

rwarchitectsv42@gmail.com

www.vision42.org

To: Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]; Christ, Lisa[Christ.Lisa@epa.gov]
From: DeCair, Sara
Sent: Tue 11/22/2016 1:43:55 PM
Subject: Fw: EPA Administrator Gina McCarthy Defends Plan for Drinking Water | NBC Bay Area

Another great reflection of our message from our Administrator. And I thought Peter did an excellent job yesterday with the Regions.

S.

From: Wieder, Jessica
Sent: Tuesday, November 22, 2016 8:22 AM
To: Veal, Lee; White, Rick; Perrin, Alan; DeCair, Sara; Snead, Kathryn
Subject: Fwd: EPA Administrator Gina McCarthy Defends Plan for Drinking Water | NBC Bay Area

See below: NBC Bay Area article on the drinking water PAG.

Jessica Wieder
U.S. Environmental Protection Agency
Radiation Protection Program
202-343-9201
m: 202-420-9353

Sent from my iPho

Begin forwarded message:

From: "Jones, Enesta" <Jones.Enesta@epa.gov>
Date: November 22, 2016 at 8:00:17 AM EST
To: "Fuld, John" <Fuld.John@epa.gov>, "Loop, Travis" <Loop.Travis@epa.gov>, "Lee, Monica" <Lee.Monica@epa.gov>, "Dennis, Allison" <Dennis.Allison@epa.gov>, "Valentine, Julia" <Valentine.Julia@epa.gov>, "Lynn, Tricia" <lynn.tricia@epa.gov>, "Wieder, Jessica" <Wieder.Jessica@epa.gov>, "Millett, John" <Millett.John@epa.gov>
Subject: RE: EPA Administrator Gina McCarthy Defends Plan for Drinking Water | NBC Bay Area

Stuart Walker, National Radiation Expert at the EPA's Superfund Division wrote in an email, "My management was wondering how we are going to justify allowing consumption of potentially much higher concentrations of radiologically impacted water than we generally

would during an emergency."

And, Senior Attorney in the Office of General Counsel at EPA, Charles Openchowski wrote, "This guidance would allow cleanup levels that exceed (current levels) by a factor of 100, 1000, and in two instances 7 million, and there is nothing to prevent those levels from being the final cleanup achieved."

Enesta Jones

U.S. EPA

Office of Media Relations

Office: 202.564.7873

Cell: 202.236.2426

"The root of all joy is gratefulness."

From: Fuld, John
Sent: Tuesday, November 22, 2016 7:59 AM
To: Jones, Enesta <Jones.Enesta@epa.gov>; Loop, Travis <Loop.Travis@epa.gov>; Lee, Monica <Lee.Monica@epa.gov>; Dennis, Allison <Dennis.Allison@epa.gov>; Valentine, Julia <Valentine.Julia@epa.gov>; Lynn, Tricia <lynn.tricia@epa.gov>
Subject: RE: EPA Administrator Gina McCarthy Defends Plan for Drinking Water | NBC Bay Area

Just listened to this. The most concerning thing from the video is that the reporter said he has "internal memos" .....Old DOD guy wonder were COMSEC comes into play here?

From: Jones, Enesta
Sent: Tuesday, November 22, 2016 7:56 AM
To: Loop, Travis <Loop.Travis@epa.gov>; Lee, Monica <Lee.Monica@epa.gov>; Fuld, John <Fuld.John@epa.gov>; Dennis, Allison <Dennis.Allison@epa.gov>; Jones, Enesta

<Jones.Enesta@epa.gov>; Valentine, Julia <Valentine.Julia@epa.gov>; Lynn, Tricia <lynn.tricia@epa.gov>
Subject: EPA Administrator Gina McCarthy Defends Plan for Drinking Water | NBC Bay Area

Same outlet -- NBC (Bay Area) -- that wrote the 11/14 piece. **Monica, is that inquiry still open?**

http://www.nbcbayarea.com/investigations/Gina-McCarthy-Defends-Plan-for-Drinking-Water-402359016.html

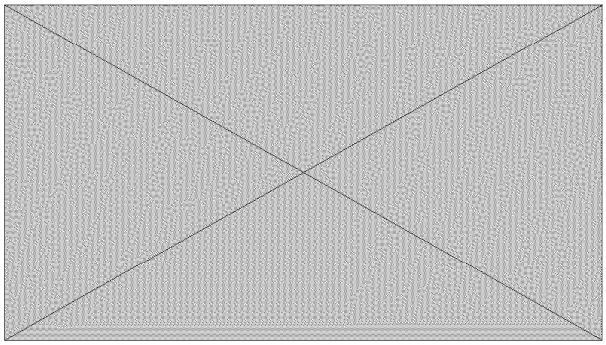
EPA Administrator Gina McCarthy Defends Plan for Drinking Water

By Stephen Stock, Robert Campos, Michael Bott and Jeremy Carroll

•

Published at 7:25 PM PST on Nov 21, 2016 | Updated at 7:30 PM PST on Nov 21, 2016

The scenes from Fukushima, Japan in 2011 stunned the world. A magnitude 9.0 earthquake triggered a 33-foot high tsunami wave that wiped out the cooling system of the Daiichi nuclear plant releasing tons of harmful radioactive materials into surrounding communities and the Pacific Ocean. Addressing a crowd at the National Press Club in Washington D.C. Monday morning, EPA Administrator Gina McCarthy said the agency is trying to protect American citizens in a timely way from that kind of nuclear contamination.



EPA Administrator Gina McCarthy speaks at the National Press Club in Washington, D.C. (Nov. 21, 2016)
Photo credit: NBC Bay Area

“A lot of this information and this concern came out of Japan in the Fukushima incident. It didn’t get resolved quickly. There were people that were left not knowing what to do, and we thought that it was necessary to provide this information,” McCarthy said.

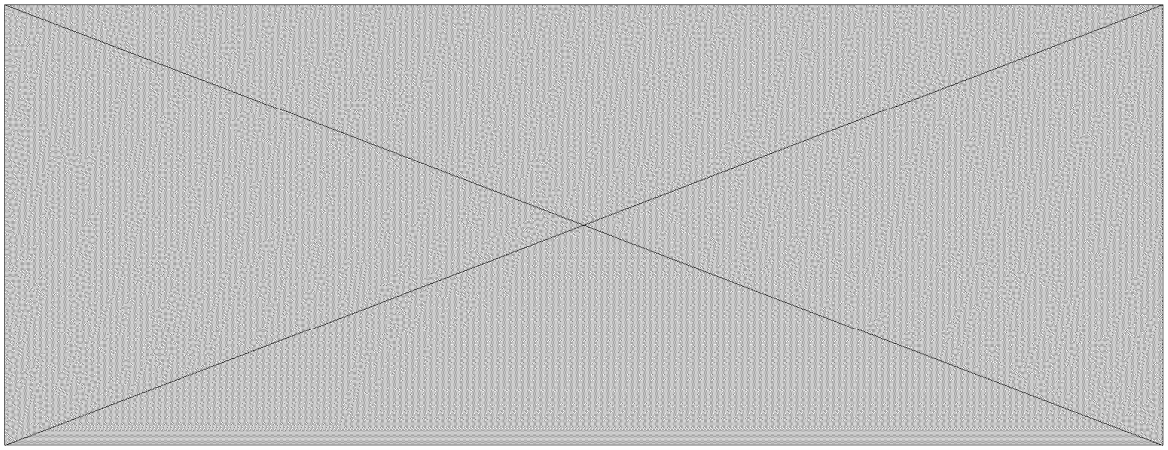
Administrator McCarthy’s appearance was the first public comment directly about questions surrounding a new proposal to allow higher levels of radiation in drinking water after an NBC Bay Area investigation uncovered concerns about the proposal (click here to see original story from November 14, 2016).

The EPA administrator told the crowd that there are greater concerns over radiation today, saying, “We have more at issue right now in terms of radiation, we have the little bombs that can happen.”

The EPA’s answer is a Protective Action Guide (PAG), which has been in development since at least 2009. The 2009 PAG lists 107 radioactive materials. The most recent, in 2016, lists only 3. For each material, it lists a maximum level. At that level, government agencies or rescue crews must provide bottled water or evacuate residents.

The concern is over radioactive materials which are “decaying.” That means they’re emitting particles, gamma rays or electrons. This radiation can change the chemical balance of cells or change DNA, which can lead to birth defects, cancer, and in large enough doses - death.

Before the EPA released its new document, agencies relied on the Safe Drinking Water Act of 1974 for acceptable radiation levels in drinking water after emergencies.



Safe drinking water chart.

Daniel Hirsch, Director of the Program on Environmental and Nuclear Policy at UC Santa Cruz, accuses the agency of “trying to sneak this plan through.” He’s concerned that the levels in the Protective Action Guide, or “PAG” are drastically higher than the Safe Drinking Water Act.

“When I looked at the table of numbers that they were proposing and compared them to the Safe Drinking water levels, I almost fell off my chair,” said Hirsch. “I’ve never before seen someone increasing by a factor of a thousand, by 10 thousand or 100 thousand. I’ve never ever seen numbers like that and I thought at first it must be a misprint. It isn’t. They’re actually proposing increases that large.”

To view links to EPA PAGS:

- 2009
- 2013
- 2016

The EPA’s chief stressed that this should not affect the water we drink every day. “I don’t want anyone to think that we are changing our standards for drinking water, that is not the case,” McCarthy said. She referred to an apocalyptic scenario following a nuclear disaster, saying

“What we are trying to do is figure out how to actually start transitioning from a case where everybody is in their house and hunkered down, and can’t drink drinking water to being able to understand what exposures - in a temporary way - would allow life to continue.”

A key issue in this debate surrounds the word “temporary.” How long would the higher doses of radiation be allowed in drinking water?

According to McCarthy, “We are providing the best information we can in those transition days, not sending a signal that we think that those numbers should be the standard for drinking water.”

But the EPA’s own manual says that these doses are for the “first and a limited number of subsequent years.”

Photo credit: EPA

Hirsch thinks the plan will benefit industry and hurt consumers. “It (the PAG) is for a year to several years afterward, so it makes no sense unless you are an industry or agency that has polluted groundwater or surface water and you want to avoid having to clean it up.”

Documents obtained by NBC Bay Area reveal that even the EPA’s own experts are concerned about the proposed plan as far back as 2009.

Stuart Walker, National Radiation Expert at the EPA’s Superfund Division wrote in an email, “My management was wondering how we are going to justify allowing consumption of potentially much higher concentrations of radiologically impacted water than we generally would during an emergency.”

And, Senior Attorney in the Office of General Counsel at EPA, Charles Openchowski wrote, “This guidance would allow cleanup levels that exceed (current levels) by a factor of 100, 1000, and in two instances 7 million, and there is nothing to prevent those levels from being the final cleanup achieved.”

When the EPA posted its plan for public review it received 67,404 responses. Only about six of those were positive. Both Senator Barbara Boxer and New York’s State Assistant Attorney General John Sipos (Click here to see NY Attorney General letter) have written letters

asking the EPA to withdraw the proposal due to the concerns over public health. Sixty environmental groups have also written a letter, and at least one lawsuit is in the works.

- **View the environmental groups letter here.**

But despite the opposition, Administrator Gina McCarthy is intent on moving forward with the new rules. She told her listeners today, “We’re doing the best we can to provide advice in a situation that we certainly hope no will ever face in the United States.”

Connect with NBC Bay Area: Follow us on Social Media and download our app!

Enesta Jones

U.S. EPA

Office of Media Relations

Office: 202.564.7873

Cell: 202.236.2426

"The root of all joy is gratefulness."

To: Christ, Lisa[Christ.Lisa@epa.gov]; Burneson, Eric[Burneson.Eric@epa.gov]
Cc: Mclain, Jennifer[Mclain.Jennifer@epa.gov]; Greene, Ashley[Greene.Ashley@epa.gov]; Wadlington, Christina[Wadlington.Christina@epa.gov]
From: Grevatt, Peter
Sent: Mon 11/21/2016 6:36:12 PM
Subject: FW: FRN EPA Drinking Water PAG 11-21-16
FRN EPA Drinking Water PAG 11-21-16.docm

Looks like just the bottom of P. 1 and on to P.2. Please make any necessary corrections, let me take a quick scan and then send forward to Steph to move to FR when we get clearance.

From: Beauvais, Joel
Sent: Monday, November 21, 2016 12:56 PM
To: Grevatt, Peter <Grevatt.Peter@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Campbell, Ann <Campbell.Ann@epa.gov>
Subject: FRN EPA Drinking Water PAG 11-21-16

Peter/Eric - My comments on the PAG FRN. I have no further comments on the RTC or other documents.

Joel

To: Burneson, Eric[Burneson.Eric@epa.gov]
Cc: Christ, Lisa[Christ.Lisa@epa.gov]
From: Wadlington, Christina
Sent: Mon 11/21/2016 3:23:19 PM
Subject: FW: DW PAGs Rollout for OAR review and input
ROLL OUT PAGS 10 19 16.docx

Here's the latest that I have.

From: Dennis, Allison
Sent: Wednesday, October 19, 2016 2:07 PM
To: Wadlington, Christina <Wadlington.Christina@epa.gov>
Subject: FW: DW PAGs Rollout for OAR review and input

FYI

From: Dennis, Allison
Sent: Wednesday, October 19, 2016 1:55 PM
To: McMichael, Nate <McMichael.Nate@epa.gov>
Cc: Millett, John <Millett.John@epa.gov>
Subject: DW PAGs Rollout for OAR review and input

Before we share the attached with OPA and Joel, I wanted to see if ya'll (and ORIA) could give it a quick review? Edits welcome. Any way you can send us edits by Monday cob? Thanks! - Allison

To: Christ, Lisa[Christ.Lisa@epa.gov]; Flaharty, Stephanie[Flaharty.Stephanie@epa.gov]
Cc: Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]; Burneson, Eric[Burneson.Eric@epa.gov]
From: Greene, Ashley
Sent: Mon 11/21/2016 2:11:38 PM
Subject: RE: OP Inquiry re: PAGs DW draft FRN

Hi Lisa,

Steph is out on jury duty today, but she gave me a head's up so I'll move it up.

Thanks,

Ashley

From: Christ, Lisa
Sent: Monday, November 21, 2016 9:11 AM
To: Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>
Cc: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>; Greene, Ashley <Greene.Ashley@epa.gov>
Subject: RE: OP Inquiry rc: PAGs DW draft FRN

Hi Stephanie,

Peter came by with a hard copy of his one edit on page 6. See attached track change and clean versions. This is ready to move forward so OP can transmit to OMB for review. Please let me know if you need anything else.

Lisa

From: Flaharty, Stephanie
Sent: Tuesday, November 15, 2016 12:44 PM
To: Christ, Lisa <Christ.Lisa@epa.gov>
Cc: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>

Subject: RE: OP Inquiry re: PAGs DW draft FRN

Hi Lisa,

I've made mostly format teaks (mark-up attached) and provided a clean version attached as well. I'll move to Peter for approval…

Thanks,

Steph

From: Christ, Lisa
Sent: Monday, November 14, 2016 1:25 PM
To: Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>
Cc: Burneson, Eric <Burneson.Eric@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Bangser, Paul <bangser.paul@epa.gov>
Subject: RE: OP Inquiry re: PAGs DW draft FRN

Hi Stephanie,

Attached are two revised FRNs; a track change and a clean version that addresses OGC comments. Please let me know if you need anything else.

Thanks-

Lisa

From:
Sent: Monday, November 07, 2016 12:44 PM
To: Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>
Subject: RE: OP Inquiry re: PAGs DW draft FRN

Lisa can you check on the status and get back to Stephanie on the FRN.

From: Flaharty, Stephanie
Sent: Monday, November 07, 2016 12:37 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Subject: OP Inquiry re: PAGs DW draft FRN

Eric,

Nicole Owen (OP) wants to know when our draft FRN will be ready for OMB review.

Thanks,

Steph

To: Burneson, Eric[Burneson.Eric@epa.gov]; Perrin, Alan[Perrin.Alan@epa.gov]
Cc: DeCair, Sara[DeCair.Sara@epa.gov]; Christ, Lisa[Christ.Lisa@epa.gov]
From: Veal, Lee
Sent: Fri 11/18/2016 10:09:14 PM
Subject: RE: levels of radioactivity in drinking water

Eric,

I will definitely be available to listen in and be helpful where we can.

Lee

Lee Ann B. Veal

Acting Deputy Director, Radiation Protection Division

Office of Radiation and Indoor Air

Office: 202-343-9448; Cell: 202-617-4322

www.epa.gov/radiation

From: Burneson, Eric
Sent: Friday, November 18, 2016 4:40 PM
To: Perrin, Alan <Perrin.Alan@epa.gov>
Cc: Veal, Lee <Veal.Lee@epa.gov>; DeCair, Sara <DeCair.Sara@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>
Subject: Re: levels of radioactivity in drinking water

Thanks Sara or Lee on the phone would be fine if it works for them. This is just an educational effort on the DW PAG and we only need help answering questions about PAGs in general and how they are used

Sent from my iPhone

On Nov 18, 2016, at 4:33 PM, Perrin, Alan <Perrin.Alan@epa.gov> wrote:

> Eric, I'm going to be out of town next week, but will send the invite on to Lee and Sara so that OAR will have some technical expertise at the table (or on the call) to help with any

questions as necessary. This sounds primarily like an educational effort; if there are any specific points you would like us to emphasize at the meeting, let us know. -Alan

Alan Perrin, Acting Director
Radiation Protection Division, USEPA
ofc (202) 343-9775 | mbl (202) 279-0376

From: Burneson, Eric
Sent: Friday, November 18, 2016 9:34 AM
To: Perrin, Alan <Perrin.Alan@epa.gov>
Subject: FW: levels of radioactivity in drinking water

Alan: See the mail string below about the Drinking Water PAG. We are having a conference call with the Regional Water DD's to clarify with the DW PAG is and is not. The call is scheduled for Monday at noon. I wanted to make you aware of the call and why we are holding it (see the note below from Region9). I also wanted to extend an invitation to participate in the call to you or your staff.

Eric G. Burneson, P.E.

Director of Standards and Risk Management

Office of Ground Water and Drinking Water

U.S. Environmental Protection Agency

From: Beauvais, Joel
Sent: Wednesday, November 16, 2016 5:06 PM
To: Loop, Travis <Loop.Travis@epa.gov>; Grevatt, Peter <Grevatt.Peter@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Rupp, Mark <Rupp.Mark@epa.gov>; Shapiro, Mike <Shapiro.Mike@epa.gov>; Campbell, Ann <Campbell.Ann@epa.gov>; Distefano, Nichole <DiStefano.Nichole@epa.gov>; Brown, Tristan <Brown.Tristan@epa.gov>; Lee, Monica <Lee.Monica@epa.gov>
Subject: Re: levels of radioactivity in drinking water

Peter and Eric - I think it would be helpful to do a call with Water DDs ok this, as the misinformation campaign led by some of the groups seems to be getting back to RAs, who will need accurate info on the PAG.

Joel

On Nov 16, 2016, at 1:12 PM, Loop, Travis <Loop.Travis@epa.gov> wrote:

I'm not sure if it would be helpful to provide her with our top messages/explanation of this effort, which is part of OAR's overall work to update the PAG from 1992 with current science.

We've worked to get correct information out to the media including to NBC News in San Francisco, but the critics of this are pushing a false narrative about allowing more radioactivity in drinking water and media is giving them credence.

During a radiological emergency, radioactive material could be released into the rivers, lakes, and streams used by public water suppliers. EPA has proposed non-regulatory guidance that authorities can use to protect residents from experiencing the harmful effects from radiation in drinking water following an emergency. EPA published the proposed drinking water *Protective Action Guide (PAG) for Radiological Incidents* on June 10, 2016 and accepted public comments through July 25, 2016. EPA is currently evaluating the comments.

The purpose of EPA's Protective Active Guide (PAG) for Radiological Incidents is to guide planning and decision-making efforts by local and state officials. It is not intended for long-term or everyday use. The proposed PAG does not affect EPA's drinking water standards for radionuclides. Therefore, affected public water systems are expected to take actions to return to compliance with drinking water standards after a radiological emergency as soon as practicable.

https://www.epa.gov/radiation/protective-action-guides-pags#tab-1

Travis Loop

Director of Communications
Office of Water

U.S. Environmental Protection Agency

202-870-6922

loop.travis@epa.gov

From: Rupp, Mark
Sent: Wednesday, November 16, 2016 1:50 PM
To: Beauvais, Joel <Beauvais.Joel@epa.gov>; Shapiro, Mike <Shapiro.Mike@epa.gov>; Campbell, Ann <Campbell.Ann@epa.gov>; Loop, Travis <Loop.Travis@epa.gov>
Cc: Distefano, Nichole <DiStefano.Nichole@epa.gov>; Brown, Tristan <Brown.Tristan@epa.gov>
Subject: Fwd: levels of radioactivity in drinking water

Joel and Team. Below. I'll let you know if Alexis gets any responses from others...Joel, you may want to give her a call.

Begin forwarded message:

From: "Strauss, Alexis" <Strauss.Alexis@epa.gov>
Date: November 16, 2016 at 1:16:23 PM EST
To: "Rupp, Mark" <Rupp.Mark@epa.gov>, "Spalding, Curt" <Spalding.Curt@epa.gov>, "Enck, Judith" <Enck.Judith@epa.gov>, "Garvin, Shawn" <garvin.shawn@epa.gov>, "McTeerToney, Heather" <McTeerToney.Heather@epa.gov>, "Kaplan, Robert" <kaplan.robert@epa.gov>, "Curry, Ron" <Curry.Ron@epa.gov>, "Hague, Mark" <Hague.Mark@epa.gov>, "McGrath, Shaun" <McGrath.Shaun@epa.gov>, "McLerran, Dennis" <mclerran.dennis@epa.gov>
Subject: levels of radioactivity in drinking water

Dear RAs and Mark,

We were surprised to learn of new OW guidance re allowing increased levels of radioactivity in drinking water. We're receiving very negative media coverage and irate citizen letters. Is this change to EPA's "Protective Action Guide" news to you? Given the emphasis Joel has given to updating the lead and copper rule, this seems like an unwelcome distraction.
Alexis

http://www.nbcbayarea.com/investigations/E-P-AS-NEW-EMERGENCY-PLAN-FOR-DRINKING-WATER-CONCERNS-MANY-401206656.html

To: Hill, Glynis[Hill.Glynis@epa.gov]
Cc: Christ, Lisa[Christ.Lisa@epa.gov]; Veal, Lee[Veal.Lee@epa.gov]
From: DeCair, Sara
Sent: Thur 11/17/2016 5:21:00 PM
Subject: RE: SAN 5198 PAG Manual and Drinking Water PAG
EPA PAG Manual Final 11-15-2016.pdf
EPA PAG Manual FRN 11-15-2016.docx
PAG Action Memo to Administrator 11-15-2016.docx
PAGs Finalization Comm Plan 11-15-2016.docx

Hi Glynis!

It is exciting to report that the PAG Manual is headed from OAR to the Administrator's office with an FR Notice for her signature. I've attached the PAG Manual and FR notice, and also the Action Memo and Comms Plan with internal Qs and As. Let me know if you have any questions – I'm at my desk: 202-343-9108. Thanks! -- Sara

From: Hill, Glynis
Sent: Thursday, November 17, 2016 12:03 PM
To: DeCair, Sara <DeCair.Sara@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Veal, Lee <Veal.Lee@epa.gov>
Subject: SAN 5198 PAG Manual and Drinking Water PAG

Good morning Ladies:

It's been awhile so I am checking in to see where we are on these documents? Can I get a redline strike out of the latest version before either come to OP?

Glynis Hill – Environmental Scientist | Office of the Administrator | Office of Policy | Office of Regulatory Policy & Management

(202) 564-1139 | 3512V WJC North | Mail Code 1803 | 1200 Pennsylvania Avenue, NW | Washington, DC 20460

To: Christ, Lisa[Christ.Lisa@epa.gov]
Cc: Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]
From: Flaharty, Stephanie
Sent: Tue 11/15/2016 5:44:02 PM
Subject: RE: OP Inquiry re: PAGs DW draft FRN
FRN EPA Drinking Water PAG 11-15-16.sf.docm
FRN EPA Drinking Water PAG 11-14-16_w OCG comments_clean.slf edit.docx

Hi Lisa,

I've made mostly format teaks (mark-up attached) and provided a clean version attached as well. I'll move to Peter for approval…

Thanks,

Steph

From: Christ, Lisa
Sent: Monday, November 14, 2016 1:25 PM
To: Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>
Cc: Burneson, Eric <Burneson.Eric@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Bangser, Paul <bangser.paul@epa.gov>
Subject: RE: OP Inquiry re: PAGs DW draft FRN

Hi Stephanie,

Attached are two revised FRNs; a track change and a clean version that addresses OGC comments. Please let me know if you need anything else.

Thanks-

Lisa

From:
Sent: Monday, November 07, 2016 12:44 PM

To: Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>
Subject: RE: OP Inquiry re: PAGs DW draft FRN

Lisa can you check on the status and get back to Stephanie on the FRN.

From: Flaharty, Stephanie
Sent: Monday, November 07, 2016 12:37 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Subject: OP Inquiry re: PAGs DW draft FRN

Eric,

Nicole Owen (OP) wants to know when our draft FRN will be ready for OMB review.

Thanks,

Steph

To: Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]; Christ, Lisa[Christ.Lisa@epa.gov]
From: Flaharty, Stephanie
Sent: Tue 11/15/2016 2:08:45 PM
Subject: RE: OP Inquiry re: PAGs DW draft FRN

Thank you !

From: Hernandez-Quinones, Samuel
Sent: Tuesday, November 15, 2016 9:08 AM
To: Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>
Subject: RE: OP Inquiry re: PAGs DW draft FRN

Federal Radiological Monitoring and Assessment Center

From: Flaharty, Stephanie
Sent: Tuesday, November 15, 2016 8:22 AM
To: Christ, Lisa <Christ.Lisa@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Subject: RE: OP Inquiry re: PAGs DW draft FRN

Please tell me what "FRMAC" stands for (page 9)?

From: Christ, Lisa
Sent: Monday, November 14, 2016 1:25 PM
To: Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>
Cc: Burneson, Eric <Burneson.Eric@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Bangser, Paul <bangser.paul@epa.gov>
Subject: RE: OP Inquiry re: PAGs DW draft FRN

Hi Stephanie,

Attached are two revised FRNs; a track change and a clean version that addresses OGC comments. Please let me know if you need anything else.

Thanks-

Lisa

From:
Sent: Monday, November 07, 2016 12:44 PM
To: Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>
Subject: RE: OP Inquiry re: PAGs DW draft FRN

Lisa can you check on the status and get back to Stephanie on the FRN.

From: Flaharty, Stephanie
Sent: Monday, November 07, 2016 12:37 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Subject: OP Inquiry re: PAGs DW draft FRN

Eric,

Nicole Owen (OP) wants to know when our draft FRN will be ready for OMB review.

Thanks,

Steph

To: Wadlington, Christina[Wadlington.Christina@epa.gov]; Christ, Lisa[Christ.Lisa@epa.gov]
From: Hernandez-Quinones, Samuel
Sent: Mon 11/14/2016 8:39:58 PM
Subject: RE: PAG Guidance
EO12866_PAG for DW_2060-ZA19_Final Guidance_10_19_2016-v2.docx

Hi Christina,

This is the version we sent to OMB. We have not received any feedback from them yet.

Sam

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water

Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Wadlington, Christina
Sent: Monday, November 14, 2016 3:36 PM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>
Subject: PAG Guidance

Can I have the most updated version? The last one I have is from October 10, 2016.

To: Christ, Lisa[Christ.Lisa@epa.gov]; Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]
Cc: Wehling, Carrie[Wehling.Carrie@epa.gov]
From: Bangser, Paul
Sent: Mon 11/14/2016 6:06:17 PM
Subject: Comments on public comment document
Public Comments Draft DW PAG_v3 11-10-16 - Comments.docx

Thanks for sending this. I made two minor comments on the attached (which is the version you forwarded on 11/10). Other than that, we are OK with this draft.

Paul Bangser
Attorney, Office of General Counsel
U.S. Environmental Protection Agency
202-564-5479
bangser.paul@epa.gov

To: Christ, Lisa[Christ.Lisa@epa.gov]
From: Hernandez-Quinones, Samuel
Sent: Thur 11/10/2016 3:35:53 PM
Subject: RE: Input for Alternate FRN DW PAG
Public Comments Draft DW PAG_v3 11-9-16.docx

Hi Lisa,

Attached is the revised version of the document. It is in redline strikeout.

Let me know if you have any comments.

Thanks

Sam

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water

Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Christ, Lisa
Sent: Thursday, November 10, 2016 9:02 AM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Subject: FW: Input for Alternate FRN DW PAG

Hi Sam,

Please let me know the status ASAP

Thanks-

Lisa

Ps-your office phone is forwarded to your cell phone

From: Burneson, Eric
Sent: Thursday, November 10, 2016 8:50 AM
To: Christ, Lisa <Christ.Lisa@epa.gov>
Subject: FW: Input for Alternate FRN DW PAG

What is the status of this FRN. I have to brief Joel today.

From: Hernandez-Quinones, Samuel
Sent: Monday, October 31, 2016 10:59 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>
Subject: Input for Alternate FRN DW PAG

Hi Eric,

Attached is our input for the Alternate FRN for the DW PAG in case the DW part has to be issued separately from the overall PAG Manual.

Let me know if you have any edits or comments.

Thanks

Sam

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water

Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

To: Christ, Lisa[Christ.Lisa@epa.gov]
From: Flaharty, Stephanie
Sent: Tue 11/8/2016 1:19:12 PM
Subject: RE: OP Inquiry re: PAGs DW draft FRN

Thanks Lisa !

From: Christ, Lisa
Sent: Monday, November 07, 2016 4:36 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>; Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>
Subject: RE: OP Inquiry re: PAGs DW draft FRN

Per Paul Bangser, OCG, he received revisions from Sam on his previous comments and said he'd look at it tomorrow. Hopefully he'll be prepared to sign off tomorrow.

From: Burneson, Eric
Sent: Monday, November 07, 2016 12:44 PM
To: Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>
Subject: RE: OP Inquiry re: PAGs DW draft FRN

Lisa can you check on the status and get back to Stephanie on the FRN.

From: Flaharty, Stephanie
Sent: Monday, November 07, 2016 12:37 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Subject: OP Inquiry re: PAGs DW draft FRN

Eric,

Nicole Owen (OP) wants to know when our draft FRN will be ready for OMB review.

Thanks,

Steph

ED_001057_00004948

For inclusion in International Operating Response Framework (IORF): U.S. and International Radiation Emergency Information & Guidelines (5/25/2012)

Key Points for Crafting Public Messages

Emergency response radiation guidelines suggest precautions that state and local authorities can take to protect people from receiving an amount of radiation that might pose a risk to their health when there is a large release of radioactive material into the environment.

- In most cases, the dose guidelines set in the U.S. and those set by the International Atomic Energy Agency are very similar.
- The U.S. and international guidelines may appear different because they use different time frames or the guidelines are being applied to multiple vs. singular exposure pathways.
    - For example, U.S. has separate guidelines for food and water while the international standard applies to both food and water together.
- It is also important to note that the U.S. and international community use different measurement systems, which is why U.S. guidelines are written in Rem and international guidelines in Sieverts.
    - 1 Sievert is equal to 100 Rem. Simple mathematics allows us to compare guidelines.

Evacuation/Sheltering in place

- The evacuation and sheltering guidelines are similar in the U.S. and the international community.
- Both guidelines recommend actions that should be taken to avoid doses in the first several days after an incident.
- The decision to evacuate or shelter is made by state and local officials.
    - In the case of a radiological incident, both evacuating and going inside provide protection from the radiation outside.

Potassium Iodide (KI)

- KI is a supplementary protection action, which is used in concert with the primary protective actions from radioiodines: evacuation and food interdiction. FDA's guidance on potassium iodide (KI) is consistent with the international guidance.
- FDA's guidance provides recommended dosages of KI for all age groups, with special emphasis on protecting children, the group most vulnerable to the effects of radiation. KI dosage recommendations may vary across countries due to differences in diet or metabolism within certain populations.

Workers

- The U.S. and international day-to-day occupational standards are similar. However, these are not emergency response levels.
- For emergency response situations, both sets of guidelines acknowledge that extreme circumstances call for extreme measures and allow for higher exposure to workers during these times.
    - Response in high exposure areas is intended for life-saving in catastrophic situations, on a voluntary and risk-informed basis.

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Cargo, Commerce and Passengers

- The U.S. and international day-to-day limits for surface contamination on radioactive material shipments (RAM) are the same. However, these are not emergency response levels.
- Currently there are no radioactive contamination guidelines for cargo screening or clearing imported goods during an emergency.
- There are many factors that need to be taken into account to develop a cargo screening emergency response guideline.
    - Explaining how shipments are being screened may provide the public peace of mind without having to explain screening levels.
- Travelers from the impacted area may be contaminated. For perspective, consider release criteria for patients who have undergone nuclear medicine procedures.
    - As part of public information, it will be important to explain to passengers the concept of radioactive decay and the value of and procedure for self-decontamination.

Relocation

- Both the U.S. and international guidelines for relocation are based around radiation doses that should be avoided over the course of a year.
    - These doses can be avoided by moving people out of an area or taking other action that help limit exposure, like providing alternative sources of food and water.

Food and Water

- At this time, the only emergency response guideline in the U.S. for water is listed in DHS' "Planning Guidance for Protection and Recovery Following Radiological Dispersal Device (RDD) and Improvised Nuclear Device (IND) Incidents."
- The U.S. has separate food guidelines and, for RDDs and INDs, separate water guidelines, while the international community has a standard that takes into account a combined exposure from both food and water.
- The U.S. has enforceable drinking water standards for radionuclides promulgated in 1976. These standards were developed to reduce health risks, to the extent feasible, from exposures over a lifetime.
    - Any exceedance of standards by a public water system requires the system to notify its consumers and to take action to reduce levels.
    - For any type of radiological emergency, it is important to provide the public with actions they can take to ensure drinking water safety, such as using certain types of home water filtration systems.

Re-entry, Re-occupancy and Cleanup

- For both the U.S. and the international community, the decisions around re-entry, re-occupancy and cleanup will be based on the specific incident.
- The decisions will focus on public health and will rely on community input to determine acceptable conditions.

(Note that old units are in gray, for comparison) (Yellow is used to highlight areas needing further guidance)

Action	U.S.*		Reference	International**		Reference
Evacuation or Shelter	10-50 milliSievert (mSv)/4 days 1- 5 rem/4 days		EPA PAGs	10 mSv/2 days: Shelter, 50 mSv/7 days: Evacuate 1 rem/2 days: Shelter, 5 rem/7 days: Evacuate		IAEA GS-R-2
KI as a secondary action	50 mSv child thyroid 5 rem		FDA Guidance	100 milliGray (mGy) avertable committed absorbed dose to thyroid 10 rad *Gray~Sievert, rad~rem for gamma*		IAEA GS-R-2
Worker protection	*Day to day:* Occupational 50 mSv/year 5 rem/year	*Emergency:* 50-100-250 mSv 5-10-25 rem for the incident for 'normal' response activities; special circumstances or life saving respectively, and >25 rem only with case-by-case justification on a voluntary basis For operations other than war, military commanders limit exposure to 0.75 Gray (75 rad) and below. 0.5 Gray (50 rad) decision dose to consider withdrawing emergency responders *Gray~Sievert, rad~rem for gamma*	OSHA 1910.1096 OSHA 1910.120 NRC 10CFR20 EPA PAGs DHS 2008 DOD 2008 NCRP 138 NCRP c. 19 NCRP165	*Day to day:* Occupational: 100 mSv/5 years 10 rem/5 years	*Emergency:* 1 Sv 100 rem Responders take actions that exceed 50 mSv (5 rem) if knowledge-based voluntary decision 500 mSv (50 rem) for lifesaving and prevention of catastrophe >500 mSv (50 rem) if the expected benefits clearly outweigh the emergency worker's risks and the worker volunteers to take the action.	IAEA GS-R-2
Cargo, Commerce, Passengers	Definition of surface contaminated object: Removable -4 Bq/cm^2 beta gamma and low toxicity alpha -0.4 Bq/cm^2 other alpha Fixed -40,000 Bq/cm^2 for beta gamma and low toxicity alpha -4000 Bq/cm^2 other alpha These are not emergency levels		DOT 49CFR 173.403	Definition of surface contaminated object: Removable -4 Bq/cm^2 beta gamma and low toxicity alpha -0.4 Bq/cm^2 other alpha Fixed -40,000 Bq/cm^2 for beta gamma and low toxicity alpha -4000 Bq/cm^2 other alpha These are not emergency levels RS-G 1.7 defines radionuclide specific concentrations below which national and international trade in commodities should not be subject to regulatory control for radiation protection. Basis: Not likely to exceed 1 mSv (100 mrem) for natural origin and 0.01 mSv (1 mrem) for man-made sources.		IAEA TS-R-1 Para. 241 IAEA RS-G 1.7

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Relocation	20 mSv first year, 5 mSv/year after 2 rem first year, 0.5 rem/year after		EPA PAGs	Overall guide for Relocation, Food and Water combined: 100 mSv/year dose averted (100 mSv full term in utero) 10 rem/year Action: Temporary relocation or alternative food and water supplies Recommend use of Operational Intervention levels (OIL) derived to 10 mSv/year 1 rem/year to assure combined pathways do not exceed overall guide	IAEA BSS IAEA GSG-2
Water	*Day to day*: 40 µSv/year 4 mrem/year Not emergency levels	*Emergency:* 5 mSv/ first year 0.5 rem/ first year RDD/IND	EPA SDWA 40 CFR 141.66 DHS RDD-IND	Reference levels in the range 1-20 mSv/year 100 mrem-2 rem/year	ICRP 111
Food	5 mSv/first year 0.5 rem/first year Assume 30% of the food consumed in one year is contaminated		FDA Guidance	Food for sale/export to other countries: 1 mSv/year 0.1 rem/year First year assume 10% of imported food is contaminated; after the first year, fraction of imported contaminated food will decrease by a factor of a hundred or more	Codex Alimentarius Std 193-1995 (rev. 2010), WHO/FAO
Re-entry	Op Guides based on Relocation PAGs RDD/IND only Planned expansion of Op Guides for more scenarios		DOE Op Gds SOE Reentry	1-20 mSv and optimize below 100 mrem-2 rem/year Long-term, post-emergency exposure situation	ICRP 111
Cleanup	Incident-specific optimization for RDD/IND; Environmental cleanup regs as applicable Planning guide for long-term recovery and handling of waste disposal		DHS RDD-IND SOE Cleanup SOE Waste	1-20 mSv and optimize below 100 mrem-2 rem/year Long-term, post-emergency exposure situation Optimization process recommended to reduce exposures to below the lower part of the ICRP recommended range of 1 to 20 mSv/y (100 mrem to 2 rem/year). 1 mSv/year (100mrem/year) is typically used as the constraint for the optimization process unless special circumstances dictate that higher value is appropriate.	ICRP 111

* Note that Early and Intermediate Phase PAGs are implemented using measurable levels called derived response levels (DRLs) – similar to operational intervention levels (OILs) - which allow for quick decision-making. For food and water, nuclide-specific levels may be applied.

** For more detailed comparison of various nation's intervention levels, see NEA's compilation: http://www.oecd-nea.org/rp/reports/2003/nea3600-short-term.pdf

References:

DHS 2008 RDD-IND Planning Guide: http://www.gpo.gov/fdsys/pkg/FR-2008-08-01/html/E8-17645.htm

DOD 2008 Operations in CBRN Environments: http://www.dtic.mil/doctrine/jel/new_pubs/jp3_11.pdf

DOE Operational Guidelines: http://ogcms.energy.gov/

DOT Transport Regulations 49CFR: http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&tpl=/ecfrbrowse/Title49/49cfr172_main_02.tpl

EPA Protective Action Guides (PAGs): http://www.epa.gov/radiation/docs/er/400-r-92-001.pdf

EPA Safe Drinking Water Act (SDWA) 40 CFR 141.66: http://www.epa.gov/ogwdw/radionuclides/pdfs/qrg_radionuclides.pdf

FDA Food & Animal Feed Guidance: http://www.fda.gov/downloads/MedicalDevices/DeviceRegulationandGuidance/GuidanceDocuments/UCM094513.pdf

ICRP 111 Living in Long-term Contaminated Areas: http://www.icrp.org/publication.asp?id=ICRP%20Publication%20111

IAEA GSG-2 Nuclear or Radiological Emergency General Safety Guide: http://www-pub.iaea.org/MTCD/publications/PDF/Pub1467_web.pdf

IAEA GS-R-2 Preparedness and Response for a Nuclear or Radiological Emergency: http://www-pub.iaea.org/MTCD/publications/PDF/Pub1133_scr.pdf

IAEA RS-G 1.7 Exclusion, Exemption and Clearance Levels: http://www-pub.iaea.org/MTCD/publications/PDF/Pub1202_web.pdf

IAEA TS-R-1 Safe Transport of Radioactive Material: http://www-pub.iaea.org/mtcd/publications/pdf/pub1225_web.pdf

NCRP Commentary 19 Preparing Responders for Nuc/Rad Terrorism: http://www.ncrponline.org/Publications/Commentaries/Comm19press.html

NCRP Report 138 Management of Nuc/Rad Terrorism Events: http://www.ncrponline.org/Publications/Press_Releases/138press.html

NCRP Report 165 Responding to a Rad/Nuc Terrorism Event: http://www.ncrponline.org/Publications/Press_Releases/165press.html

NRC 10CFR20 Standards for Protection Against Radiation: http://www.nrc.gov/reading-rm/doc-collections/cfr/part020/

OSHA HAZWOPER 1910.120 Haz Waste-Emergency Response: http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=standards&p_id=9765

OSHA Ionizing Radiation Standard 1910.1096: http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10098

SOE Cleanup, Reentry and Waste papers: {pending publication}

WHO/FAO Codex Food and Feed Standard 193-1995 (rev. 2010): www.codexalimentarius.net/download/standards/17/CXS_193e.pdf

ED_001057_00004948

To: Christ, Lisa[Christ.Lisa@epa.gov]
Cc: Greene, Ashley[Greene.Ashley@epa.gov]; Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]; Burneson, Eric[Burneson.Eric@epa.gov]; Oshida, Phil[Oshida.Phil@epa.gov]
From: Grevatt, Peter
Sent: Mon 9/12/2016 6:55:17 PM
Subject: Fwd: Revised Drinking Water PAG chapter - OGC comments
PAG.Draft DW PAG OGWDW 8-31.cw.docx
ATT00001.htm

FYI.

Sent from my iPhone

Begin forwarded message:

From: "Wehling, Carrie" <Wehling.Carrie@epa.gov>
Date: September 12, 2016 at 12:44:34 PM EDT
To: "Neugeboren, Steven" <Neugeboren.Steven@epa.gov>, "Bangser, Paul" <bangser.paul@epa.gov>, "Grevatt, Peter" <Grevatt.Peter@epa.gov>, "Burneson, Eric" <Burneson.Eric@epa.gov>
Subject: Re: Revised Drinking Water PAG chapter - OGC comments

Sorry to be late. Here are a few comments from OGC. In particular, I was concerned with the explanation for how these relate to the NPDWRs and suggested a few edits to that paragraph. Please let me know if you'd like to discuss. Thanks.

Carrie

Caroline (Carrie) Wehling

Assistant General Counsel

Water Law Office

Office of General Counsel

U.S. Environmental Protection Agency

202-564-5492

wehling.carrie@epa.gov

From: Neugeboren, Steven
Sent: Wednesday, August 31, 2016 8:57 PM

To: Bangser, Paul
Cc: Wehling, Carrie
Subject: Fwd: Revised Drinking Water PAG chapter

Paul - I believe this is yours?

Sent from my iPhone
Steven Neugeboren
Associate General Counsel
United States Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington DC. 20460
202-564-5488

Begin forwarded message:

From: "Grevatt, Peter" <Grevatt.Peter@epa.gov>
Date: August 31, 2016 at 5:25:54 PM EDT
To: "Woolford, James" <Woolford.James@epa.gov>, "Cheatham, Reggie" <cheatham.reggie@epa.gov>, "Neugeboren, Steven" <Neugeboren.Steven@epa.gov>
Cc: "Burneson, Eric" <Burneson.Eric@epa.gov>, "Christ, Lisa" <Christ.Lisa@epa.gov>, "Beauvais, Joel" <Beauvais.Joel@epa.gov>, "Shapiro, Mike" <Shapiro.Mike@epa.gov>, "Edwards, Jonathan" <Edwards.Jonathan@epa.gov>, "Greene, Ashley" <Greene.Ashley@epa.gov>, "Perrin, Alan" <Perrin.Alan@epa.gov>
Subject: Revised Drinking Water PAG chapter

Jim, Reggie and Steve,

Please see attached to this message the revised draft drinking water radiation protective action guidelines (in track changes and clean formats). These documents have been revised in response to public comments (~60,000) received during the public comment period that ended on July 25. We are still on target for releasing the final PAG document this year, and to stay on that schedule, we would greatly appreciate any comments your offices can provide by Friday, September 9. We plan to brief the Administrator later in September and we would be glad to set up a meeting to discuss any comments you have during the week of September 12.

Thanks very much for your assistance on this!

P. Grevatt

To: Greene, Ashley[Greene.Ashley@epa.gov]
Cc: Christ, Lisa[Christ.Lisa@epa.gov]; Harris, Adrienne[Harris.Adrienne@epa.gov]
From: Burneson, Eric
Sent: Fri 9/9/2016 12:10:07 PM
Subject: Re: PAGs SEPW Hearing Fact Sheet
DW PAG - SEPW Hearing Factsheet - 09-6-16egb.docx

Attached please find my recommended revisions.

From: Greene, Ashley
Sent: Friday, September 9, 2016 2:39 AM
To: Burneson, Eric
Cc: Christ, Lisa; Harris, Adrienne
Subject: RE: PAGs SEPW Hearing Fact Sheet

Just a friendly reminder to please try to review as soon as possible.

Thanks,

Ashley

From: Greene, Ashley
Sent: Tuesday, September 06, 2016 4:08 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Harris, Adrienne <Harris.Adrienne@epa.gov>
Subject: PAGs SEPW Hearing Fact Sheet

Hi Eric,

OW requested we develop a fact sheet on the DW PAG for Joel's SEPW hearing. I took a shot at drafting a first cut, but please review and provide me with any edits before I provide to Peter for his review. OW would like it this week.

Thanks,

Ashley

To: Greene, Ashley[Greene.Ashley@epa.gov]
Cc: Christ, Lisa[Christ.Lisa@epa.gov]
From: Flaharty, Stephanie
Sent: Thur 9/8/2016 2:44:54 PM
Subject: RE: Review by COB 9/8 - CMS New Assignment - Boxer, PAGs - AL-16-001-1672

Great, thanks!

-----Original Message-----
From: Greene, Ashley
Sent: Thursday, September 08, 2016 10:44 AM
To: Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>
Subject: RE: Review by COB 9/8 - CMS New Assignment - Boxer, PAGs - AL-16-001-1672

Hi Steph,

Peter signed off on the attached. He did make one change, so attaching updated word version as well.

Thanks,
Ashley

-----Original Message-----
From: Greene, Ashley
Sent: Wednesday, September 07, 2016 4:40 PM
To: Grevatt, Peter <Grevatt.Peter@epa.gov>
Cc: Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>
Subject: Review by COB 9/8 - CMS New Assignment - Boxer, PAGs - AL-16-001-1672

Attached for your review is draft response to Sen. Boxer's letter on the proposed PAG for drinking water.

The response is due for Joel's signature tomorrow, Sept. 8.

I left a hard copy folder in your signature box for you to initial/date.

Thanks,
Ashley

To: Christ, Lisa[Christ.Lisa@epa.gov]; Burneson, Eric[Burneson.Eric@epa.gov]
From: Davis, CatherineM
Sent: Fri 9/2/2016 4:17:44 PM
Subject: Fw: ERIC REVIEW - CMS New Assignment - Boxer, PAGs - AL-16-001-1672
16-001-1672.Boxer.PAGs.pdf
AL-16-001-1672 - Boxer - PAGs - Draft Response.docx

Hi Lisa and Eric,

Do either of you have a minute to discuss this response? OCIR's preference is to use the simple response that I uploaded into CMS, so it would be helpful to understand this different approach before I provide comments to Stephanie.

Thanks,

Cathy Davis

Office of Congressional and Intergovernmental Relations

Office: 202-564-2703

Mobile: 202-573-1704

Email: davis.catherinem@epa.gov

Send mail to:

US Environmental Protection Agency

1200 Pennsylvania Ave, NW

MC: 1305A

Washington, DC 20460

From: Flaharty, Stephanie
Sent: Friday, September 2, 2016 7:31 AM
To: Davis, CatherineM
Cc: Greene, Ashley
Subject: FW: ERIC REVIEW - CMS New Assignment - Boxer, PAGs - AL-16-001-1672

Morning Cathy,

Attached is our draft response to Sen. Boxer's letter on the proposed PAG for drinking water, for your review.

The response is due to Joel today, however, we've asked for an extension (not yet granted).

Thanks,
Steph

JAMES M. INHOFE, OKLAHOMA, *CHAIRMAN*

DAVID VITTER, LOUISIANA
JOHN BARRASSO, WYOMING
SHELLEY MOORE CAPITO, WEST VIRGINIA
MIKE CRAPO, IDAHO
JOHN BOOZMAN, ARKANSAS
JEFF SESSIONS, ALABAMA
ROGER WICKER, MISSISSIPPI
DEB FISCHER, NEBRASKA
MIKE ROUNDS, SOUTH DAKOTA
DAN SULLIVAN, ALASKA

BARBARA BOXER, CALIFORNIA
THOMAS R. CARPER, DELAWARE
BENJAMIN L. CARDIN, MARYLAND
BERNARD SANDERS, VERMONT
SHELDON WHITEHOUSE, RHODE ISLAND
JEFF MERKLEY, OREGON
KIRSTEN GILLIBRAND, NEW YORK
CORY A. BOOKER, NEW JERSEY
EDWARD J. MARKEY, MASSACHUSETTS

RYAN JACKSON, *MAJORITY STAFF DIRECTOR*
BETTINA POIRIER, *DEMOCRATIC STAFF DIRECTOR*

United States Senate
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
WASHINGTON, DC 20510–6175

July 25, 2016

The Honorable Gina McCarthy
Administrator
United States Environmental Protection Agency
William Jefferson Clinton Building
1200 Pennsylvania Avenue, N.W.
Mail Code 1101A
Washington, D.C. 20460

Re: Draft Protective Action Guides for Radionuclides in Drinking Water

Dear Administrator McCarthy,

As the Ranking Member of the U.S. Senate Committee responsible for oversight of the Environmental Protection Agency (EPA), I write to express my concern about EPA's proposal to allow radioactivity in drinking water after a radiological incident at concentrations greatly above the maximum contaminant levels (MCL) set pursuant to the Safe Drinking Water Act (SDWA). Protecting the public from contamination in the water they drink is a critical duty of EPA, and I strongly urge you not to weaken radiation protection standards.

Protection of public health should be the first priority in any radiological incident response and recovery. The SDWA MCL for radionuclides in drinking water of 4 millirems (mrem) per year is designed to protect the public from increased cancer risk. Relaxing that standard could result in a much higher cancer risk, which is not acceptable.

In 2009, a similar proposal was made by the Bush Administration and subsequently withdrawn. In 2011, EPA concluded that in case of a radioactive release, the Safe Drinking Water contaminant limits would continue to be employed to protect the public from excessive radiation exposure. I am therefore troubled that EPA is now proposing to reverse that position and allow radioactivity levels far higher than SDWA MCLs -- and even higher levels than the controversial proposal it reversed upon coming into office.

The current proposal for new Protective Action Guides (PAGs) would allow strontium-90, which concentrates in bone and can cause bone cancer and leukemia, at levels 925 times the maximum contaminant limits of the Safe Drinking Water Act. It would allow iodine-131, which concentrates in the thyroid gland and can cause thyroid cancer, at concentrations 3,450 times higher than Safe Drinking Water limits. And it would allow 83 times higher levels of cesium-137, a powerful radionuclide that can irradiate the whole body.

PRINTED ON RECYCLED PAPER

EPA should not contemplate such significant reductions in public protection for something as essential to all of us as safe drinking water. The proposal is not restricted to catastrophic nuclear accidents, but covers "any release or potential release into the environment of radioactive materials in sufficient quantity to warrant consideration of protective actions."

The proposed Protective Action Guides could have a significant negative impact on public health by declaring that no protective actions need be taken to prevent people from being exposed to radioactivity in the water they drink -- even when the concentrations are much higher than the levels long deemed by EPA as the maximum acceptable contaminant limit. If there is a radiation release for which protective actions are to be considered, these Protective Action Guides will be used to determine if people will or will not be protected. As written, they would not be, even if their water contained high levels of radioactivity.

I urge you to not weaken radiation protection standards and return to a commitment to protect the American people from radioactive contamination that exceeds Safe Drinking Water Act levels.

Sincerely,

Barbara Boxer

Barbara Boxer
Ranking Member

To: Flaharty, Stephanie[Flaharty.Stephanie@epa.gov]
Cc: Christ, Lisa[Christ.Lisa@epa.gov]; Oshida, Phil[Oshida.Phil@epa.gov]
From: Burneson, Eric
Sent: Thur 9/1/2016 10:13:26 PM
Subject: FW: ERIC REVIEW - CMS New Assignment - Boxer, PAGs - AL-16-001-1672
16-001-1672.Boxer.PAGs.pdf
Draft Response to Sen Boxer - DW PAGs 8_31_16.docx

Stephanie: The attached response to the letter for Senator Boxer is ready for Peter's review. Thank you Lisa for your work in preparing this.

-----Original Message-----
From: Christ, Lisa
Sent: Wednesday, August 31, 2016 4:15 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Subject: ERIC REVIEW - CMS New Assignment - Boxer, PAGs - AL-16-001-1672

Hi Eric,
Attached is the incoming from Boxer and a draft response. This is due to Stephanie tomorrow- sorry for the quick turn around.
Lisa

-----Original Message-----
From: Flaharty, Stephanie
Sent: Monday, August 29, 2016 7:27 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>; Oshida, Phil <Oshida.Phil@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>
Subject: Due 9/1 - CMS New Assignment - Boxer, PAGs - AL-16-001-1672

Control AL-16-001-1672 (attached) has been assigned to your office. Attached is a draft response from OCIR.

This control is due for Peter's approval to move to Joel for signature on Sept. 1st. Let me know is you need an extension.

Control Subject: EPA'S PROPOSED PROTECTIVE ACTION GUIDES FOR DRINKING WATER
From: Boxer, Barbara

Thx.,
Steph

To: Christ, Lisa[Christ.Lisa@epa.gov]
Cc: Greene, Ashley[Greene.Ashley@epa.gov]; Harris, Adrienne[Harris.Adrienne@epa.gov]
From: Flaharty, Stephanie
Sent: Thur 9/1/2016 9:14:30 PM
Subject: RE: REMINDER: Due 9/1 - CMS New Assignment - Boxer, PAGs - AL-16-001-1672

I'll try thx.

-----Original Message-----
From: Christ, Lisa
Sent: Thursday, September 01, 2016 5:14 PM
To: Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>
Subject: RE: REMINDER: Due 9/1 - CMS New Assignment - Boxer, PAGs - AL-16-001-1672

Eric has the draft letter but he's been slammed! Any chance of getting more time?

-----Original Message-----
From: Flaharty, Stephanie
Sent: Thursday, September 01, 2016 10:02 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>; Oshida, Phil <Oshida.Phil@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>
Subject: REMINDER: Due 9/1 - CMS New Assignment - Boxer, PAGs - AL-16-001-1672

Tickler - due today, thx!

-----Original Message-----
From: Flaharty, Stephanie
Sent: Monday, August 29, 2016 7:27 AM
To: Burneson, Eric <burneson.eric@epa.gov>; Phil Oshida <Oshida.Phil@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>
Subject: Due 9/1 - CMS New Assignment - Boxer, PAGs - AL-16-001-1672

Control AL-16-001-1672 (attached) has been assigned to your office. Attached is a draft response from OCIR.

This control is due for Peter's approval to move to Joel for signature on Sept. 1st. Let me know is you need an extension.

Control Subject: EPA'S PROPOSED PROTECTIVE ACTION GUIDES FOR DRINKING WATER
From: Boxer, Barbara

Thx.,
Steph

To: Burneson, Eric[Burneson.Eric@epa.gov]; Oshida, Phil[Oshida.Phil@epa.gov]; Christ, Lisa[Christ.Lisa@epa.gov]; Huff, Lisa[Huff.Lisa@epa.gov]
From: Flaharty, Stephanie
Sent: Thur 9/1/2016 2:01:51 PM
Subject: REMINDER: Due 9/1 - CMS New Assignment - Boxer, PAGs - AL-16-001-1672

Tickler - due today, thx!

-----Original Message-----
From: Flaharty, Stephanie
Sent: Monday, August 29, 2016 7:27 AM
To: Burneson, Eric <burneson.eric@epa.gov>; Phil Oshida <Oshida.Phil@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>
Subject: Due 9/1 - CMS New Assignment - Boxer, PAGs - AL-16-001-1672

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This control is due for Peter's approval to move to Joel for signature on Sept. 1st. Let me know is you need an extension.

Control Subject: EPA'S PROPOSED PROTECTIVE ACTION GUIDES FOR DRINKING WATER
From: Boxer, Barbara

Thx.,
Steph

To: Christ, Lisa[Christ.Lisa@epa.gov]
From: Hernandez-Quinones, Samuel
Sent: Wed 8/31/2016 7:40:29 PM
Subject: RE: Review this week - Documents for Review DW PAG
Input for FRN Re Drinking Water PAG OGWDW 8-31.docx

Hi Lisa,

In case this is needed for the intra office review, here is the draft input for the FRN.

Sam

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water

Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Christ, Lisa
Sent: Wednesday, August 31, 2016 3:00 PM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Subject: RE: Review this week - Documents for Review DW PAG

Hi Sam,

I'm getting pressure to send this forward. Is the document ready? If not, I think we need to send it forward w/o the footnote for now.

Thank you,

Lisa

From: Christ, Lisa
Sent: Tuesday, August 30, 2016 8:20 AM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Subject: FW: Review this week - Documents for Review DW PAG

Hi Sam,

Peter's comments seem pretty straight forward. Please revise the documents to incorporate all of these comments. We'll send the revised documents to Joel for review next.

Thanks!!

Lisa

From: Grevatt, Peter
Sent: Tuesday, August 30, 2016 8:15 AM
To: Greene, Ashley <Greene.Ashley@epa.gov>
Cc: Harris, Adrienne <Harris.Adrienne@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>; Wadlington, Christina <Wadlington.Christina@epa.gov>
Subject: RE: Review this week - Documents for Review DW PAG

Please see my editorial comments on both documents attached to this message.

From: Greene, Ashley
Sent: Monday, August 29, 2016 12:20 PM
To: Grevatt, Peter <Grevatt.Peter@epa.gov>
Cc: Harris, Adrienne <Harris.Adrienne@epa.gov>
Subject: Review this week - Documents for Review DW PAG

Attached are two PAG documents for your review prior to intra-agency review by OLEM, OAR, and OGC. The documents include:

1) Chapter on drinking water to be included in full PAG document

2) Drinking water section of full PAG FRN

Note, they are in tracked changes so you can see how public comments were addressed and exactly what sections of the drinking water proposal will be included in the overall PAG Manual.

SRMD would like to initiate intra-agency review this week.

Thanks,
Ashley

To: Christ, Lisa[Christ.Lisa@epa.gov]
From: Hernandez-Quinones, Samuel
Sent: Wed 8/31/2016 7:33:01 PM
Subject: RE: Review this week - Documents for Review DW PAG
Clean Draft DW PAG OGWDW 8-31.pdf
Draft DW PAG OGWDW 8-31.docx
Redline Draft DW PAG OGWDW 8-31.pdf

Attached are the files, clean and redline for the DW input to the PAG manual. I included the word file in case you wanted to send it.

Sam

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water

Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Christ, Lisa
Sent: Wednesday, August 31, 2016 3:00 PM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Subject: RE: Review this week - Documents for Review DW PAG

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Thank you,

Lisa

From: Christ, Lisa
Sent: Tuesday, August 30, 2016 8:20 AM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Subject: FW: Review this week - Documents for Review DW PAG

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Thanks!!

Lisa

From: Grevatt, Peter
Sent: Tuesday, August 30, 2016 8:15 AM
To: Greene, Ashley <Greene.Ashley@epa.gov>
Cc: Harris, Adrienne <Harris.Adrienne@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>; Wadlington, Christina <Wadlington.Christina@epa.gov>
Subject: RE: Review this week - Documents for Review DW PAG

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From: Greene, Ashley
Sent: Monday, August 29, 2016 12:20 PM
To: Grevatt, Peter <Grevatt.Peter@epa.gov>
Cc: Harris, Adrienne <Harris.Adrienne@epa.gov>
Subject: Review this week - Documents for Review DW PAG

Attached are two PAG documents for your review prior to intra-agency review by OLEM, OAR, and OGC. The documents include:

1) Chapter on drinking water to be included in full PAG document

2) Drinking water section of full PAG FRN

Note, they are in tracked changes so you can see how public comments were addressed and exactly what sections of the drinking water proposal will be included in the overall PAG Manual.

SRMD would like to initiate intra-agency review this week.

Thanks,
Ashley

To: Christ, Lisa[Christ.Lisa@epa.gov]
From: Hernandez-Quinones, Samuel
Sent: Tue 8/30/2016 8:31:15 PM
Subject: RE: Due 9/1 - CMS New Assignment - Boxer, PAGs - AL-16-001-1672
Draft Response to Sen Boxer - DW PAGs SHQ.docx

Hi Lisa,

Attached is my input for the response letter to Sen Boxer.

Thanks
Sam

==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

-----Original Message-----
From: Christ, Lisa
Sent: Monday, August 29, 2016 9:19 AM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Subject: FW: Due 9/1 - CMS New Assignment - Boxer, PAGs - AL-16-001-1672

Hi Sam,
I'm not sure if you've seen this...please prepare a draft for review COB August 30.
Thanks-
Lisa

-----Original Message-----
From: Flaharty, Stephanie
Sent: Monday, August 29, 2016 7:27 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>; Oshida, Phil <Oshida.Phil@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>
Subject: Due 9/1 - CMS New Assignment - Boxer, PAGs - AL-16-001-1672

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This control is due for Peter's approval to move to Joel for signature on Sept. 1st. Let me know is you need an extension.

Control Subject: EPA'S PROPOSED PROTECTIVE ACTION GUIDES FOR DRINKING WATER
From: Boxer, Barbara

Thx.,
Steph

To: Christ, Lisa[Christ.Lisa@epa.gov]
From: Burneson, Eric
Sent: Mon 8/29/2016 2:59:55 PM
Subject: RE: Documents for Review DW PAG
Input for FRN Re Drinking Water PAG 8-29-16egb.docx
Draft DW PAG 8-29-16egb.docx

Lisa

Attached please find my comments and suggested for the DW PAG documents. Please let me know if you have any questions or concerns. Once you have incorporated /addressed my comments these will be ready to share with Peter.

Eric

From: Christ, Lisa
Sent: Wednesday, August 24, 2016 4:31 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Subject: FW: Documents for Review DW PAG

Hi Eric,

Attached are drafts of the drinking water chapter that will be folded into the PAG Manual and a section for the FRN describing the drinking ater PAG comments and how they've been addressed.

Lisa

From: Hernandez-Quinones, Samuel
Sent: Wednesday, August 24, 2016 3:58 PM
To: Christ, Lisa <Christ.Lisa@epa.gov>
Subject: Documents for Review DW PAG

Hi Lisa,

Attached are the files for review regarding the revisions to the DW PAG in response to public comments received on the proposal. Attached are 2 pdf files (Clean and Redline) that are very easy to read, and also a word version (this one is a bit busy since it has with tracked edits) of the DW PAG Chapter.

Also attached is the draft input for the FRN section on DW that will be incorporated into the FRN for the overall PAG Manual.

Thanks

Sam

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water

Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

To: Christ, Lisa[Christ.Lisa@epa.gov]
From: Hernandez-Quinones, Samuel
Sent: Wed 8/24/2016 7:57:59 PM
Subject: Documents for Review DW PAG
Input for FRN Re Drinking Water PAG 8-24-16.docx
Redline Strikeout Version 8-24-16.pdf
Draft DW PAG 8-24-16.docx
Clean Version Draft DW PAG 8-24-2016.pdf

Hi Lisa,

Attached are the files for review regarding the revisions to the DW PAG in response to public comments received on the proposal. Attached are 2 pdf files (Clean and Redline) that are very easy to read, and also a word version (this one is a bit busy since it has with tracked edits) of the DW PAG Chapter.

Also attached is the draft input for the FRN section on DW that will be incorporated into the FRN for the overall PAG Manual.

Thanks

Sam

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water

Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

To: Christ, Lisa[Christ.Lisa@epa.gov]
From: Hernandez-Quinones, Samuel
Sent: Thur 8/18/2016 7:53:00 PM
Subject: RE: PAG brief
Public Comments Draft DW PAG.docx

Hi Lisa,

This is the draft version of the briefing document. I tried to limit this to the most controversial issues raised in the comments. We might need to schedule a follow up meeting with Peter in case he wants to discuss other issues more broadly.

Sam
==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

-----Original Message-----
From: Christ, Lisa
Sent: Thursday, August 18, 2016 2:50 PM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Subject: PAG brief

Hi Sam. We need to get the briefing doc tonight to Peter for tomorrow's grieving. Please send me the draft as soon as possible for review. Thnx Lisa

Sent from my iPhone

To: Wehling, Carrie[Wehling.Carrie@epa.gov]
Cc: Christ, Lisa[Christ.Lisa@epa.gov]; Bangser, Paul[bangser.paul@epa.gov]
From: Hernandez-Quinones, Samuel
Sent: Thur 8/18/2016 5:55:05 PM
Subject: RE: Request for Review / Input to address Public Comments

Thanks Carrie,

I will let you know if we need additional assistance or if leadership has any additional questions regarding these public comments.

Sam

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water

Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Wehling, Carrie
Sent: Thursday, August 18, 2016 1:52 PM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Bangser, Paul <bangser.paul@epa.gov>
Subject: RE: Request for Review / Input to address Public Comments

Talked to Sue Stahle, the OGC lead for PAGs generally, and she said that these are not legal issues specific to the drinking water PAG and are being addressed generally. So these comments

are not creating any new legal issue specific to the drinking water PAG.

Sue says that the NEPA response is correct and that, on the EJ issues, OAR's position is that the guides are better than what exists now and should improve the situation for everyone so there is no EJ issue.

Let me know if you need more.

Thanks.

Carrie

Caroline (Carrie) Wehling

Assistant General Counsel

Water Law Office

U.S. Environmental Protection Agency

Washington DC 20004

202-564-5492

wehling.carrie@epa.gov

From: Hernandez-Quinones, Samuel
Sent: Wednesday, August 10, 2016 4:54 PM
To: Wehling, Carrie <Wehling.Carrie@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Bangser, Paul <bangser.paul@epa.gov>
Subject: RE: Request for Review / Input to address Public Comments

Hi Carrie,

I think a week could work for us. We are not planning to do a comment response document for this effort, but we wanted to be able to tell management, when we brief them next week, that the legal issues raised by commenters are not a real concern for the agency to move forward with this action.

Thanks

Sam

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water

Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Wehling, Carrie
Sent: Wednesday, August 10, 2016 8:40 AM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Cc: Bangser, Paul <bangser.paul@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>
Subject: RE: Request for Review / Input to address Public Comments

Hey, Sam. What is your timing on this? I am pretty slammed right now and might need a week or two.

Thanks.

Carrie

Caroline (Carrie) Wehling

Assistant General Counsel

Water Law Office

U.S. Environmental Protection Agency

Washington DC 20004

202-564-5492

wehling.carrie@epa.gov

From: Hernandez-Quinones, Samuel
Sent: Tuesday, August 09, 2016 6:54 PM
To: Wehling, Carrie <Wehling.Carrie@epa.gov>
Cc: Bangser, Paul <bangser.paul@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>
Subject: Request for Review / Input to address Public Comments

Hi Carrie,

We received a number of comments regarding "legal issues/questions" on the draft Drinking Water Protective Action Guide, which was published on the FR on June 10, 2016.

At issue are accusations that EPA, with this action, is essentially violating the legal requirements of NEPA, APA, and the EJ Executive Order. We believe that the APA issue is non-existing and neither is the NEPA question. We have a response for the NEPA question and wanted to have you review it to make sure that it is accurate. As for the EJ issue we would like your feedback.

The specific text of the comments asserting the "violations" is attached below.

Please let me know if you can provide some language to address the issues raised by the commenters.

Thank You

Sam

Response for NEPA question:

EPA does not agree with the assertion made by commenters regarding EPAs lack of conformance with NEPA requirements. "Activities for the development of federal radiation regulations and guidance in accordance with the Atomic Energy Act of 1954 are functionally equivalent to NEPA (63 Fed. Reg. 58045 [1998]). Consequently, the drinking water PAGs Manual updates meet NEPA policy goals by carrying out analyses, documentation and review procedures that are functionally equivalent to NEPA."

Comment excerpt from Environmental Stakeholder Groups:

The proposed PAGs appear also to be essentially underground regulations, in violation of the Administrative Procedure Act (APA). Adding a phrase or two asserting that the PAGs are not regulatory and are denominated as "guidance" does not change what they really are, de facto rules. There is no pretense that the PAGs are in fact not used. Indeed, the Federal Register notice of availability of the draft PAGs states explicitly, "Emergency management officials use PAGs for making decisions regarding actions to protect the public from exposure to radiation during an emergency." EPA requires incorporation of the PAGs into emergency response plans within one year of the finalization of the PAGs:

Furthermore, as noted above (supra at 5), EPA appears to have violated the APA notice-and comment requirements by hiding 107 of the 110 proposed PAG values for radionuclides without

decay and all 110 of the proposed PAG values with decay. The public cannot comment on what they cannot see. EPA has asked for public comment on Water PAGs that it says will be established only after the PAGs are finalized, defeating the entire purpose of APA notice-and comment requirements.

Additionally, there is question about conformance with the National Environmental Policy Act (NEPA), which requires review of environmental impacts of all major federal actions that can have a significant impact on the human environment. EPA establishing extremely high radioactivity concentrations and radiation doses below which no protective actions are to be taken could have significant impacts on the human environment, and these are not analyzed in an Environmental Impact Statement or Environmental Assessment

Comment excerpt from NY State Attorney General:

Furthermore, it appears that EPA staff developed the Guides outside of the Administrative Procedure Act framework for rulemakings and in violation of the National Environmental Policy Act. Although EPA claims that the proposed, draft PAGs are mere guidance, it is clear that the intent of issuing these guidelines is to provide support to decision-makers who will be responding to the release of radiation into communities and drinking water reservoirs in emergency situations. EPA states that "[The PAG manual] is designed for the use of those in Federal, State, and local government with responsibility for emergency response planning." Id. at 1-1; see also 81 Fed. Reg. at 37590 (June 2016). According to the draft manual, "EPA is proposing a two-tier drinking water PAG that would be used during the intermediate phase following a radiation incident…" 2016 Draft Drinking Water PAG at 4. Also, NRC has referred to and relied on EPA PAGs when analyzing accident scenarios at nuclear power facilities and in the recent national level "Southern Exposure 2015 (SE- 15)" exercise, which explored the consequences of a nuclear power plant accident involving "widespread contamination beyond the site boundary." See, e.g., NUREG-2161, Consequence Study of a Beyond-Design-Basis Earthquake Affecting the Spent Fuel Pool for a U.S. Mark I Boiling Water Reactor (Sept. 2014) ML14255A365; NRC SECY-15-0140 at 7- 8 (Nov. 5, 2015) ML15203A139. NRC and its licensees rely on EPA PAGs for emergency planning purposes and in determining different levels of emergencies at power reactor and spent fuel pool sites.

Other Comments:

Point Three: The Proposed PAGs Violate Multiple Laws and Executive Orders.

Aside from blatant violation of the Clean Water Act (CWA) 33 USC §1251 et seq (1972) and the

Safe Drinking Water Act (SDWA) 42 USC §300f et seq (1974), the proposed PAGs violate both the letter and spirit of: the Emergency Planning and Community Right-to-Know Act (EPCRA) 42 USC §11001 et seq (1986); the Endangered Species Act 16 USC § 1531 et seq (1973); the National Environmental Policy Act (NEPA) 42 USC §4321 (1969); the Pollution Prevention Act (PPA) 42 USC §13101; and the Superfund law, Comprehensive Environmental Response, Compensation and Liability Act (also identified as the CERCLA). Additionally, the proposed PAGs violate the Executive Order on Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (EO 12898) 59 FR 7629 (Feb 16, 1994) and Executive Order on Protection of Children From Environmental Health Risks and Safety Risks (EO 13045) 62 FR 19885 (Apr 23, 1997).

Point Seven: The Proposed PAGs Disregard Environmental Justice.

The proposed PAGs ignore environmental justice populations. Which environmental justice populations would fall within this ambit is a relatively unexplored question. But the lack of exploration, in and of itself, reflects the failure to give adequate consideration to such groups. Federal regulatory actions have enabled nuclear power interests to impose enormous costs upon site communities which have little to no recourse to self-protection. It is beyond cavil that Native American, African American, Hispanic and impoverished communities have born – and continue to bear – a disproportionate share of the pollutant burden from every step of the nuclear power fuel cycle. Two groups which existing evidence suggests would warrant particular focus are: African American women and Native Americans in Western states. Recent data shows African American women are at particular risk of the most aggressive forms of breast cancer. This does not mean the cause is radiation exposure (in fact, prevailing hypotheses point to other reasons), but it does mean these women may be at heightened risk from radiation – a carcinogen associated with breast cancer. Native Americans have most demonstrably been a group victimized and disregarded by those charged with protecting their welfare and environs. Native American reservations have been despoiled by uranium mining, milling, and other fuel cycle activities for decades. Watersheds of Native American reservation areas – areas also at heightened risk from climate change – are at particularly elevated level of risk. PAGs which facilitate adding to the health and environmental burden of indigenous communities are quite simply egregious.

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water

Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

To: Christ, Lisa[Christ.Lisa@epa.gov]
From: Hernandez-Quinones, Samuel
Sent: Thur 8/18/2016 12:20:22 PM
Subject: RE: PAG comments
Public Comments Draft DW PAG.docx

Yes,

I will bring copies to the meeting. I will also bring copies of the substantive comments in case anyone wants to look them over.

Sam

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water

Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Christ, Lisa
Sent: Thursday, August 18, 2016 8:17 AM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Subject: PAG comments

Hi Sam,

Do you have a summary for this morning to go over with Eric?

Lisa

To: Burneson, Eric[Burneson.Eric@epa.gov]
Cc: Christ, Lisa[Christ.Lisa@epa.gov]; Grevatt, Peter[Grevatt.Peter@epa.gov]
From: Greene, Ashley
Sent: Thur 8/18/2016 11:05:02 AM
Subject: Re: Alan's vm

Lisa mentioned this to me yesterday and I checked in with Peter and he is fine with OIRA attending.

Thanks,
Ashley

Sent from my iPhone

On Aug 17, 2016, at 5:45 PM, Burneson, Eric <Burneson.Eric@epa.gov> wrote:

Peter: I would like to invite OAR to your briefing on Friday to discuss the RADS PAG. Let me know if there are any concerns.

Eric

From: Christ, Lisa
Sent: Wednesday, August 17, 2016 1:24 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Subject: Alan's vm

Eric –

The OMB review for the entire PAG manual is supposed to end on 8/19 (Friday). Sara mentioned they have been providing pass back responses as OMB has been providing comments. I'm not aware of any drinking water PAG comments that have come in during this last manual review by OMB. I'm waiting to hear back if water comments were received and/or OMB review is complete and/or on target to be completed this Friday.

Sam has been coordinating closely with Sara and the ORIA contractor in sorting and responding to public comments. She's provided draft responses for NEPA questions, since they received similar questions on other PAGs. I can extend the Friday invitation to ORIA folks, Jonathan, Alan, Lee and Sara if you'd like.

Alternatively we could also set up a joint meeting early next week. Let me know your preference.

Of the 57,000 comments there are ~50 letters that have substantive comments to address. I'm not aware of any comments that provide a compelling reason to revise the PAG.

Lisa

To: Christ, Lisa[Christ.Lisa@epa.gov]
From: Veal, Lee
Sent: Wed 8/3/2016 6:37:49 PM
Subject: FW: PAGS paragraph for OW
AX-11-000-4864_FinalResponse - Copy.docx

Here is a response that we prepared a few years ago----some of the information may be quite relevant as the complaints really haven't changed through time.

Lee Ann B. Veal

CREM Center Director

Office of Radiation and Indoor Air

Office: 202-343-9448; Cell: 202-617-4322

www.epa.gov/radiation

From: Ferguson, Rafaela
Sent: Wednesday, August 03, 2016 2:23 PM
To: Veal, Lee <Veal.Lee@epa.gov>
Subject: PAGS paragraph for OW

Rafaela Ferguson

Special Assistant/Regional Coordinator

Radiation Protection Division

Office of Radiation and Indoor Air

Tel: 202-343-9362

Email: ferguson.rafaela@epa.gov

Fax: 202-343-2304

Ex. 6 - Personal Privacy @gmail.com

Dear Mr. Metcalf:

Thank you for your March 28, 2011 inquiry about standards for radioisotope iodine-131. In responding, EPA assumes that your inquiry refers to the *EPA's Manual of Protective Action Guides and Protective Actions for Nuclear Incidents* (EPA 400-R-92-001), commonly referred to as "the PAG Manual." If this is not the case, please inquire again with additional background so that EPA can provide a response to your question.

EPA's Manual of Protective Action Guides and Protective Actions for Nuclear Incidents (EPA 400-R-92-001), commonly referred to as "the PAG Manual," is not an environmental standard. The PAG Manual does not supersede any environmental laws nor does it have any bearing on the interpretation of environmental laws. The purpose of the PAG Manual is to provide guidance to state and local officials on actions that could be taken to protect human health and safety during a radiological emergency. The protective actions and guidance in the Manual apply only during emergency response, and again, do not supersede any laws or environmental standards.

The latest version of the PAG Guidance was published in 1992. EPA is in the process of updating this document, and intends to release a draft of the revision so that the public can submit comments on it. EPA will publish a notice in the Federal Register seeking public input when the draft revision is ready, and will consider the comments received when writing the final document. The most up-to-date information on the status of the PAG Manual revision will be posted on our website: http://www.epa.gov/radiation/rert/pags.html.

I hope you find this information helpful. Thank you again for contacting the EPA.

Sincerely,

Alan Perrin, Deputy Director
Radiation Protection Division

To: Christ, Lisa[Christ.Lisa@epa.gov]
From: Veal, Lee
Sent: Wed 8/3/2016 6:37:05 PM
Subject: Shapiro Incoming AX-16-001-0672 for OW
16-001-0672.pdf

Control letter

FYI – per our discussion.

Lee Ann B. Veal

CREM Center Director

Office of Radiation and Indoor Air

Office: 202-343-9448; Cell: 202-617-4322

www.epa.gov/radiation

From: Ferguson, Rafaela
Sent: Wednesday, August 03, 2016 2:36 PM
To: Veal, Lee <Veal.Lee@epa.gov>
Subject: Shapiro Incoming AX-16-001-0672 for OW

Rafaela Ferguson

Special Assistant/Regional Coordinator

Radiation Protection Division

Office of Radiation and Indoor Air

Tel: 202-343-9362

Email: ferguson.rafaela@epa.gov

Fax: 202-343-2304

SUSAN H. SHAPIRO
ATTORNEY AT LAW

75 NORTH MIDDLETOWN ROAD
NANUET, NEW YORK 10954

TEL (845) 371-2100
FAX (845) 371-3721
SUSAN@HITOSHAPIROLAW.COM
MBS@OURROCKLANDOFFICE.COM

July 28, 2016

RECEIVED
2016 JUL 29 PM 1:30
OFFICE OF THE
EXECUTIVE SECRETARIAT

Ms. Gina McCarthy
Environmental Protection Agency Administrator
US EPA Headquarters
William Jefferson Clinton Building
1200 Pennsylvania Ave, N.W.
Washington, D.C. 20460

RE: Environmental Protection Agency (EPA)
Radioactive Protective Action Guides (PAGs) and
Water PAGs Docket Number
(EPA-HQ-OAR-2007-0268; FRL-9947-55-OW)

Dear Administrator McCarthy,

As a mother, farmer, and attorney I strongly oppose the U.S. Environmental Protection Agency's proposed new Protective Action Guides (PAGs) for radionuclides in drinking water and urge that they not be adopted.

It is unconscionable that the EPA, who is charged with protecting the environment and public health, is even considering PAGs that would increase the permissible level of strontium-90 to 7400 pico-curies per liter (pCI/L) from the current Safe Drinking Water Act limit of 8 pCi/L, an increase of a factor of 925. Iodine-131 would increase to 10,350 pCi/L, from the Safe Drinking Water Act limit of 3 pCi/L, an increase of a factor of 3,450. Such high levels of radioactivity in drinking water cannot be defended from a public health perspective.

Why these PAGs are even being considered brings me to question whether the EPA is no longer acting in the interest of the environment and the public, and is being unduly influenced by the nuclear industry. Or even worse, could the proposal of these dangerous PAGs be due to the amount of radioactive waste that has already been produced by the nuclear industry and is now leaking into the environment at uncontrollable and increasing

rates? Instead of the EPA increasing "acceptable" levels of toxic radiation in drinking water the EPA should acknowledge there is a national crisis due to the existing man-made radiation for which no safe waste disposal methodology exists.

These newly proposed PAGs are not merely for catastrophic emergencies but were proposed to be expanded to apply to "all radiological releases for which a protective action may be considered." That includes on-going radiation leaks from all nuclear reactors into groundwater, as all groundwater must be considered future drinking water given the worldwide drinking water crisis. It must be acknowledged that every one of our nations nuclear reactors has tritium leaks, as well as leaks of other radionuclides, including radioactive cesium, strontium, and carbon-14.

The proposed drinking water PAG is for the intermediate phase of a release, after the immediate phase has passed and the initial release has been stabilized, it could extend endlessly. Fukashima has taught us that the intermediate phase of a release may be many or every hundreds of years before releases are stabilized. If the EPA is proposing these dangerous PAGs in an attempt to cover up future Fukashima like disasters they are making a grave mistake and putting the future health of all Americans in danger.

Using the most current risk estimates from the National Academy of Sciences and the EPA itself, radiation exposures at these proposed levels would result in cancer risks ten to a thousand times higher than the EPA's longstanding acceptable risk range for environmental carcinogens.

It is troubling that the EPA has attempted to quietly and quickly approve the proposed to increase permissible levels of radioactivity by orders of magnitude. The National Academy of Sciences and the EPA have consistently found ionizing radiation to be more dangerous than previously assumed, not less.

Prior to any change in the PAG, the EPA must conduct comprehensive health studies, especially considering the health of children and women who are the most vulnerable members of our society. The NRC started a study, but it was stopped without conclusion or providing the research it commenced. Why was the NRC stopped, could it be because the research proved increased levels of man-made radiation from nuclear reactors was actually causing the wide-spread cancer epidemic?

The EPA cannot blindly increase radiation exposure levels in drinking water without answers to the potential impacts man-made radiation emissions have on human health

Furthermore, since the EPA has already delegated its responsibilities to monitor on-going radioactive releases from nuclear reactors to the NRC, who in turn delegated that responsibilities to the reactor operators, the polluters, the EPA has no idea how much radiation is already being released into the drinking water supply and the air. Given the fact that America's nuclear fleet is aging and are subject to increased unplanned shutdowns, (for example in the past two years the Indian Point reactors have had nine hot-shut downs) which causes high spikes of radiation to be released into reactor

communities, yet the EPA allows the NRC to average monitoring data to make it meaningless. Daily radiation releases must be added together, not averaged, to provide adequate data for the EPA to make any kind of informed decisions. Right now no such data exists and therefore the EPA cannot blindly approve PAGs which would ultimately make an already dangerous situation worse. Again, I question whether undue pressure has been exerted on the EPA by the NRC and the nuclear industry to not do their job. It has been documented that during many hot shutdowns the EPA has simultaneously turned off its own radiation monitors. Please explain why this has occurred repeatedly, and how the EPA is actually monitoring radiation released from nuclear reactors now?

For too long the EPA has abdicated its responsibilities with regard to radiation pollution and delegated its responsibilities to the NRC who has no interest in protecting public or environmental health. Given the recent Flint, Michigan disaster, where the polluting industry was allowed to self-monitor and self-regulate toxic waste in the drinking water supply, it is beyond negligent, and could be considered malfeasance for the EPA to repeat that history, but this time with radioactive pollution.

Therefore, I urge you as the EPA Administrator not to allow this dangerous PAG proposal to be approved and instead require the use of the Safe Drinking Water Act to significantly decrease radiation exposure levels in drinking water to adequately protect, pregnant women, children, and future generations.

Sincerely yours,

Susan Hito Shapiro

Susan Hito Shapiro

Cc: Senator Gillibrand
Senator Schumer
Congresswoman Nita Lowey
Congressmen Eliot Engel
Senator Sean Patrick Maloney
Judith Enck, EPA Regional Administrator
Joan Matthews, EPA Clean Water Director

ORIGIN ID:PSBA (845) 371-2100
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To: Grevatt, Peter[Grevatt.Peter@epa.gov]; Osegueda, Carlos[osegueda.carlos@epa.gov]; Oshida, Phil[Oshida.Phil@epa.gov]; Christ, Lisa[Christ.Lisa@epa.gov]; Huff, Lisa[Huff.Lisa@epa.gov]; Greene, Ashley[Greene.Ashley@epa.gov]; Harris, Adrienne[Harris.Adrienne@epa.gov]; Wadlington, Christina[Wadlington.Christina@epa.gov]
From: Flaharty, Stephanie
Sent: Wed 8/3/2016 11:34:02 AM
Subject: Inside EPA: Sen. Boxer Criticizes EPA's Radiological Water Guide

Sen. Boxer Criticizes EPA's Radiological Water Guide

August 02, 2016

Senate environment panel ranking member Barbara Boxer (D-CA) is criticizing EPA for proposing draft drinking water amendments to its protective action guides (PAGs) for radiological emergencies that would allow for significant exceedances to Safe Drinking Water Act (SDWA) limits.

In a July 25 letter to EPA Administrator Gina McCarthy, Boxer urges the agency to reverse course and embrace levels that do not surpass SDWA limits. “Protecting the public from contamination in the water they drink is a critical duty of EPA," she writes, and “strongly urge[s]" McCarthy "not to weaken radiation protection standards.”

Boxer alludes to a similar proposal put forth by the Bush administration at the 11th-hour in early 2009, but which was pulled back by the Obama administration over concerns that the levels would exceed EPA's acceptable cancer risk range. Then, in 2011, EPA concluded that SDWA contaminant limits would continue to apply to protect the public from radiological exposure during a release, she says.

"I am therefore troubled that EPA is now proposing to reverse that position and allow radioactivity levels far higher than SDWA [maximum contaminant levels (MCLs)] -- and even higher levels than the controversial proposal it reversed upon coming into office," Boxer says.

Boxer's comments add to severe criticisms EPA has received from a coalition of dozens of environmental groups on the draft water amendments -- for which the public comment period closed July 25.

EPA expects the water amendments to the agency's PAGs will be used as a tool by local emergency responders to "restrict consumption of drinking water contaminated during a radiological emergency."

The agency defines a PAG as "the projected dose to an individual from a release of radioactive material at which a specific protective action to reduce or avoid that dose is recommended."

EPA is proposing a two-tiered approach that would provide more protective exposure levels for sensitive populations than the general population but would still allow radioactivity in drinking water at orders of magnitude beyond SDWA limits for radionuclides.

The amendments would deem protective action dose levels of 500 millirems/year (mrem/yr) in the first year after an incident for the general population, and 100 mrem/yr in the first year for infants, children age 15 and under, and pregnant or nursing women, according to a notice of availability for the draft drinking water PAG. The safety levels would be for emergency management officials to apply in the intermediate phase period after a radiological emergency -- which EPA has at times defined as up to one year but in other cases up to several years after an incident.

But Boxer, echoing environmentalists' concerns, points out that the proposed guide would not only be used in catastrophic nuclear events, "but covers 'any release or potential release into the environment of radioactive materials in sufficient quantity to warrant consideration of protective actions.'"

She says the SDWA MCL for radionuclides of 4 mrem/yr for drinking water is aimed at protecting the public from a higher risk of cancer.

The proposed guide "could have a significant negative impact on public health by declaring that no protective actions need be taken to prevent people from being exposed to radioactivity in the water they drink -- even when the concentrations are much higher than the levels long deemed by EPA as the maximum acceptable contaminant limit," she says. People will not be protected under the PAGs if their water contains high levels of radioactivity, she adds.

Boxer points out that EPA's proposal would allow people to consume water containing strontium-90 -- which she says can cause bone cancer and leukemia -- at levels 925 times the MCL, and would permit consumption of water containing iodine-131 -- which can cause thyroid cancer -- at levels 3,450 times the MCL. Further, it would allow concentrations of cesium-137 -- "a powerful radionuclide that can irradiate the whole body" -- in drinking water at levels 83 times the SDWA limits.

To: Christ, Lisa[Christ.Lisa@epa.gov]
From: Oshida, Phil
Sent: Tue 8/2/2016 5:24:58 PM
Subject: From Alan Perrin -- FW: Talkies for Water PAG, Internal Q&A
DWPAG_Internal-QA_07292016.docx
DWPAG_TPts_07292016.docx

Phil Oshida S Associate Director S Standards and Risk Management Division S Office of Ground Water and Drinking Water S Office of Water S U.S. EPA S 202.564.6594

From: Perrin, Alan
Sent: Tuesday, August 02, 2016 12:33 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Oshida, Phil <Oshida.Phil@epa.gov>; Edwards, Jonathan <Edwards.Jonathan@epa.gov>
Subject: RE: Talkies for Water PAG, Internal Q&A

Sorry, forgot one of the attachments…

From: Perrin, Alan
Sent: Tuesday, August 02, 2016 12:31 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Oshida, Phil <Oshida.Phil@epa.gov>; Edwards, Jonathan <Edwards.Jonathan@epa.gov>
Subject: FW: Talkies for Water PAG, Internal Q&A

Eric,

I'm not sure whether the Agency has received additional inquiries on the DW PAG. However, we thought it would be handy to have a (more) focused set of talking points for use across our organizations. You may have already engaged in a similar exercise yourself, in which case it's just a matter of being on the same page, so to speak. Our cut at talking points is attached, along with a background refresher Q&A that was put

together some time ago. Let me know if this is useful and what you suggest for next steps (I understand that may include putting these in a back pocket for now).

Regards, Alan

Alan Perrin, Deputy Director
Radiation Protection Division, USEPA
ofc (202) 343-9775 | mbl (202) 279-0376

From: DeCair, Sara
Sent: Sunday, July 31, 2016 2:32 PM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Veal, Lee <Veal.Lee@epa.gov>; Nesky, Anthony <Nesky.Tony@epa.gov>; Wieder, Jessica <Wieder.Jessica@epa.gov>
Cc: Perrin, Alan <Perrin.Alan@epa.gov>
Subject: Fwd: Talkies for Water PAG, Internal Q&A

For prep in case Sen. Boxer called Gina, we provided these materials for Eric Burneson to give to Peter and the AA if needed. Alan made a few changes to the Q&A so we should replace the one on the One Drive site. I can do that Tuesday.

Sara

Sent from my iPhone

To: Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]; Christ, Lisa[Christ.Lisa@epa.gov]; Veal, Lee[Veal.Lee@epa.gov]; Nesky, Anthony[Nesky.Tony@epa.gov]; Wieder, Jessica[Wieder.Jessica@epa.gov]
Cc: Perrin, Alan[Perrin.Alan@epa.gov]
From: DeCair, Sara
Sent: Sun 7/31/2016 6:31:35 PM
Subject: Fwd: Talkies for Water PAG, Internal Q&A
DWPAG_Internal-QA_07292016.docx
ATT00001.htm
DWPAG_TPts_07292016.docx
ATT00002.htm

For prep in case Sen. Boxer called Gina, we provided these materials for Eric Burneson to give to Peter and the AA if needed. Alan made a few changes to the Q&A so we should replace the one on the One Drive site. I can do that Tuesday.
Sara

Sent from my iPhone

Begin forwarded message:

From: "Perrin, Alan" <Perrin.Alan@epa.gov>
Date: July 29, 2016 at 3:39:36 PM EDT
To: "DeCair, Sara" <DeCair.Sara@epa.gov>
Subject: RE: Talkies for Water PAG, Internal Q&A

Take a look. Lots of revs to the talkies, see what you think – I was able to get this under Jon's nose before he blew town, so includes his first blush. Q&A sheet, no real changes just formatting, header and title (more aimed toward current use as background attachment?); I'm happy to stick with prev version also if that helps w/version control or anything. Cheers.

Alan Perrin, Deputy Director
Radiation Protection Division, USEPA
ofc (202) 343-9775 | mbl (202) 279-0376

From: DeCair, Sara
Sent: Wednesday, July 27, 2016 1:44 PM
To: Perrin, Alan <Perrin.Alan@epa.gov>
Subject: Talkies for Water PAG, Internal Q&A

Thanks for checking these talking points and editing so they're more useful. I've attached the clean version Q&A too.

Sara D. DeCair

http://www.epa.gov/radiation/rert/pags.html

202-343-9108

Room 1416 B in WJC West

To: A-AND-R-DOCKET[A-AND-R-DOCKET@epa.gov]
Cc: Christ, Lisa[Christ.Lisa@epa.gov]; Veal, Lee[Veal.Lee@epa.gov]; Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]
From: DeCair, Sara
Sent: Thur 7/28/2016 8:14:47 PM
Subject: FW: Drinking Water PAG Comments
Draft Comments on Drinking Water PAG.docx

I'm sending this to the OAR Docket staff for addition to our proposal. EPA-HQ-OAR-2007-0268. Thank you!

From: Desai, Lisa [mailto:Lisa.Desai@illinois.gov]
Sent: Thursday, July 28, 2016 3:32 PM
To: DeCair, Sara <DeCair.Sara@epa.gov>
Subject: FW: Drinking Water PAG Comments

Sara,

I have received the attached information and it has been reviewed by Asst Director Klinger. I understand the agency missed the deadline but Kay Foster indicated that you would still like for us to submit. I trust you will get it in the appropriate hands. Please find attached .

Should you have any questions please let me know.

Thanks in advance.

Lisa M. Desai, Office of the Director

Assistant to the Director

2200 South Dirksen Parkway

Springfield, Illinois 62703

Office: 217-557-6225

Fax: 217-524-7967

To: Huff, Lisa[Huff.Lisa@epa.gov]
Cc: Christ, Lisa[Christ.Lisa@epa.gov]
From: Hernandez-Quinones, Samuel
Sent: Wed 7/27/2016 8:15:28 PM
Subject: RE: OW staff mtg bullets for PAG?

Hi Lisa,

I did not thought that a bullet was needed since OW leadership was well aware of this milestone last week. But in case it is needed, please see the Bi-Weekly input below.

Sam

Radiation Protective Action Guides – The public comment period on the proposed draft Drinking Water Radiation Protective Action Guide closed on July 25, 2016 after a 45 day comment period. EPA plans to address comments received on the draft And incorporate suggestions from the public as it prepares to issue a final guide which will be incorporated into the overall PAG Manual. The PAG Manual is scheduled to be published by the end of 2016. (Sam H. - 564-1735)

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water

Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Huff, Lisa
Sent: Wednesday, July 27, 2016 3:58 PM
To: Christ, Lisa <Christ.Lisa@epa.gov>
Cc: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Subject: OW staff mtg bullets for PAG?

Should we have a bullet for OW staff bullets about the PAG comment period closing?

Lisa Foersom Huff

Associate Branch Chief

Targeting and Analysis Branch

Standards and Risk Management Division

Office of Groundwater and Drinking Water

U.S. EPA

EPA East Bldg. Rm. 2331 C

202-566-0787

To: Christ, Lisa[Christ.Lisa@epa.gov]
From: Hernandez-Quinones, Samuel
Sent: Wed 7/27/2016 4:57:32 PM
Subject: RE: next steps on PAGs
PAGs Project Schedule.pdf

Hi Lisa,

See attached file.

Sam

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water

Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Christ, Lisa
Sent: Wednesday, July 27, 2016 10:52 AM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Subject: next steps on PAGs

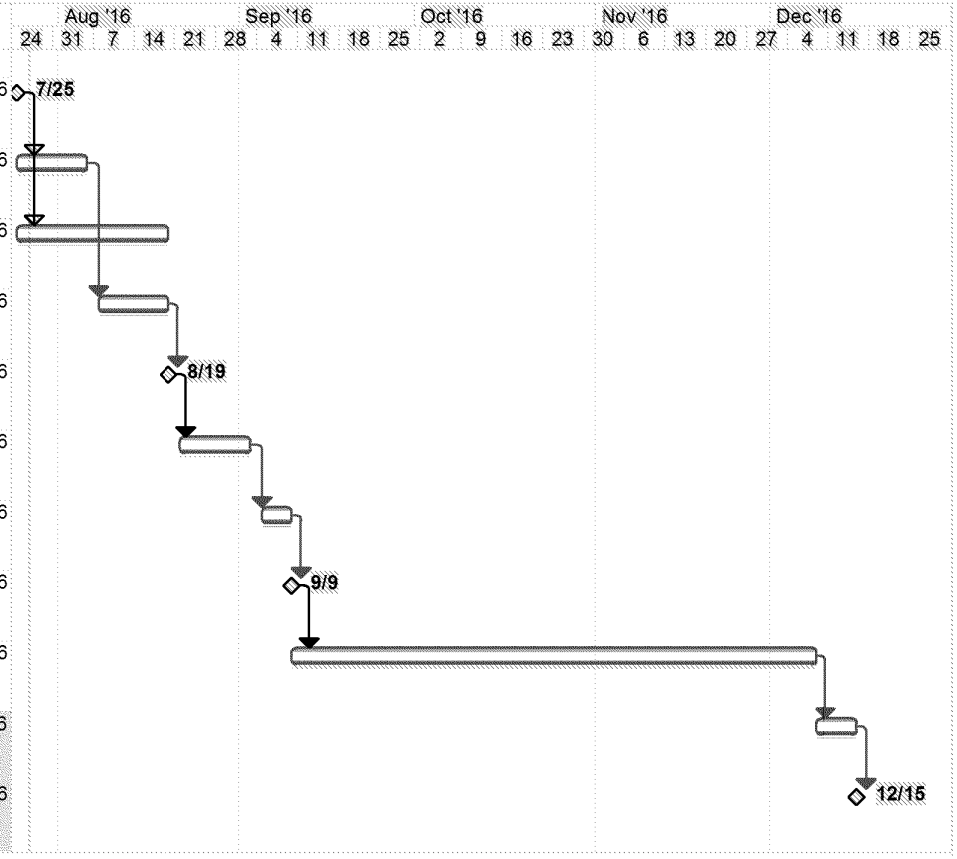
Hi Sam,

Please prepare a schedule/next steps on the PAG, including meetings with ORIA on comments, timing for addressing comment, intra-agency review, etc. Is it possible to

get something before 1pm? Sorry for the short notice, hopefully you can work from the OAR attachment

Lisa

ID	Task Name	Duration	Start	Finish
1				
2	DW PAG Comment Period Ends	0 days	Mon 7/25/16	Mon 7/25/16
3	OW Bins and Addresses Comments	10 days	Mon 7/25/16	Fri 8/5/16
4	OW Revises DW PAG Chapter	20 days	Mon 7/25/16	Fri 8/19/16
5	OW Management Reviews/Approves DW PAG Edits	10 days	Mon 8/8/16	Fri 8/19/16
6	OW submit DW PAG Chapter Input to Office of Policy	0 days	Fri 8/19/16	Fri 8/19/16
7	OP conducts EPA Intra-Agency review	10 days	Mon 8/22/16	Fri 9/2/16
8	OW addresses comments from OP review	5 days	Mon 9/5/16	Fri 9/9/16
9	OP submits DW PAG Chapter Input to OMB	0 days	Fri 9/9/16	Fri 9/9/16
10	OMB conducts Inter-Agency Review	90 edays	Fri 9/9/16	Thu 12/8/16
11	DW PAG Chapter incorporated into OAR Final PAG Manual	5 days	Fri 12/9/16	Thu 12/15/16
12	Final PAG Manual FR signed by OAR AA	0 days	Thu 12/15/16	Thu 12/15/16



Project: PAGs Project Schedule
Date: Wed 7/27/16

Task		Milestone		External Tasks	
Split		Summary		External Milestone	
Progress		Project Summary		Deadline	

ED_001057_00005308

To: Christ, Lisa[Christ.Lisa@epa.gov]
From: Hernandez-Quinones, Samuel
Sent: Wed 7/27/2016 4:53:45 PM
Subject: RE: next steps on PAGs

Hi Lisa,

Here is a table that contains the next steps for the PAG Project.

Sam

Task	Duration	Start	Finish
DW PAG Comment Period Ends	0 days	7/25/16	7/25/16
OW Bins and Addresses Comments	10 days	7/25/16	8/5/16
OW Revises DW PAG Chapter	20 days	7/25/16	8/19/16
OW Management Reviews/Approves DW PAG Edits	10 days	8/8/16	8/19/16
OW submit DW PAG Chapter Input to Office of Policy	0 days	8/19/16	8/19/16
OP conducts EPA Intra-Agency review	10 days	8/22/16	9/2/16
OW addresses comments from OP review	5 days	9/5/16	9/9/16
OP submits DW PAG Chapter Input to OMB	0 days	9/9/16	9/9/16
OMB conducts Inter-Agency Review	90 edays	9/9/16	12/8/16
DW PAG Chapter incorporated into OAR Final PAG Manual	5 days	12/9/16	12/15/16
Final PAG Manual FR signed by OAR AA	0 days	12/15/16	12/15/16

From: Christ, Lisa
Sent: Wednesday, July 27, 2016 10:52 AM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Subject: next steps on PAGs

Hi Sam,

Please prepare a schedule/next steps on the PAG, including meetings with ORIA on comments, timing for addressing comment, intra-agency review, etc. Is it possible to

get something before 1pm? Sorry for the short notice, hopefully you can work from the OAR attachment

Lisa

To: Grevatt, Peter[Grevatt.Peter@epa.gov]; Osegueda, Carlos[osegueda.carlos@epa.gov]; Burneson, Eric[Burneson.Eric@epa.gov]; Oshida, Phil[Oshida.Phil@epa.gov]; Christ, Lisa[Christ.Lisa@epa.gov]; Huff, Lisa[Huff.Lisa@epa.gov]; Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]; Greene, Ashley[Greene.Ashley@epa.gov]; Harris, Adrienne[Harris.Adrienne@epa.gov]; Wadlington, Christina[Wadlington.Christina@epa.gov]
From: Flaharty, Stephanie
Sent: Wed 7/27/2016 9:57:07 AM
Subject: Inside EPA: Environmental Groups Oppose EPA Draft Radiological Events Water Guide

Environmental Groups Oppose EPA Draft Radiological Events Water Guide

July 26, 2016

Environmental groups are strongly criticizing EPA's draft drinking water amendments to protective action guides (PAGs) for radiological emergencies, arguing the plan would allow radionuclide concentrations far beyond Safe Drinking Water Act (SDWA) limits and disparaging the agency for failing to disclose concentration levels for most of the radionuclides under the guidance.

In July 25 comments, 63 environmental groups, including national organizations Natural Resources Defense Council, Sierra Club and Clean Water Action, express "strong opposition" to EPA's proposed drinking water addition to the agency's PAGs for radionuclides, urging the agency to withdraw the plan. At the same time, drinking water utilities are backing EPA's proposal while the nuclear industry is calling for a less stringent dose range. The comment period on the drinking water PAGs ended July 25.

While the Obama administration pulled back an 11th-hour Bush administration proposal for water PAGs due to concerns that the levels proposed would exceed EPA's acceptable cancer risk range, "EPA has now reversed itself again, and is proposing water PAGs orders of magnitude higher than its longstanding [maximum contaminant limits (MCLs)] under the Safe Drinking Water Act and that are even more troubling than were those proposed in the last days of the prior administration," the groups say.

Furthermore, EPA "again is apparently cutting corners in terms of transparency and public process in order to push through these worrisome proposals in the last months in office," the comments say.

"Despite public consternation about the plan, EPA has employed troubling hide-the-ball ploys," Public Employees for Environmental Responsibility (PEER), one of the 63 signatories to the comment letter, says in a July 26 press release. In particular, PEER says the proposal sets new concentrations for 110 radionuclides, but discloses only three of these concentrations.

In the water amendments, EPA is proposing a two-tiered approach that would provide more protective exposure levels for sensitive populations than the general population but would still allow radioactivity in drinking water at orders of magnitude beyond SDWA limits for radionuclides.

The amendments would deem protective action dose levels of 500 millirems/year (mrem/yr) in the first year after an incident for the general population, and 100 mrem/yr in the first year for infants, children age 15 and under, and pregnant or nursing women, according to a notice of availability for the draft drinking water PAG. The safety levels would be for emergency management officials to apply in the intermediate phase period after a radiological emergency -- which EPA has at times defined as up to one year but in other cases up to several years after an incident. EPA says there currently is no intermediate PAG for drinking water, but decided that following the 2011 Fukushima, Japan, nuclear power plant incident, the agency needed a drinking water PAG.

EPA defines a PAG as "the projected dose to an individual from a release of radioactive material at which a specific protective action to reduce or avoid that dose is recommended." With regard to the water amendments, EPA expects them to be used as a tool by local emergency responders to "restrict consumption of drinking water contaminated during a radiological emergency," the agency says in the draft PAG for drinking water.

SDWA Levels

The environmental coalition cites the three radionuclides EPA does give PAGs for as evidence of how far beyond SDWA levels the draft levels would go. For instance, the MCL for iodine-131 is 3 picoCuries/liter (pCi/L) while the proposed PAG is 10,350 pCi/L, which is 3,450 times higher, the coalition says.

"Given that the three radionuclides for which EPA does now provide proposed concentrations have even higher levels than those proposed in 2009, one can surmise that were EPA to disclose the figures for the rest it could be apparent that they exceed MCLs by even larger amounts," the comments say. They add, "Fear of government embarrassment is not a legal exemption from disclosure requirements."

Further, the coalition says it is inaccurate for EPA to claim that the water PAGs are within the agency's generally acceptable risk range of 1 x 10-4 to 1x 10-6. They point out that the PAGs define the intermediate phase for which the guidance might apply to last as long as several years, which means the risk related to the water PAGs would be about 1.7 x 10-3 or more. "That is roughly ten to a thousand times the risk range," the coalition says.

In addition, the water PAG seems to attempt to skirt anti-backsliding provisions of the SDWA, which ban increasing allowable concentrations of pollutants, the coalition says.

"We find it perplexing that EPA, in the face of the controversies associated with its performance in the Flint, Michigan and Gold King Mine, Colorado matters, would attempt in the last months of this administration to push through radically weakened allowable concentrations of radioactivity in drinking water," the coalition says, noting that those two incidents involved breaches of SDWA levels.

"The proposed Water PAGs for radionuclides would, if finalized, allow the public to be exposed to radioactivity thousands of times higher than SDWA limits, with no actions taken to protect them."

At the same time, a group representing drinking water utilities is backing the agency's proposal. The American Water Works Association says in undated comments it backs the agency's two-tiered approach to the water PAG because a single-tier approach could be insufficiently protective of vulnerable subpopulations or impose too many burdens in attempts to protect the general population

And in July 25 comments, the Nuclear Energy Institute (NEI) says that while it believes the two-tier approach is an improvement over a past proposal, the group "still recommends that the EPA consider setting a range of 2-10 rem per year for all anticipated pathways of exposure (inclusive of consumption of food or drinking water) which would greatly provide enhanced flexibility for balancing avoidance of potential radiological health risks with risks and impacts associated with disruptive protective actions."

NEI goes on to say that for extreme situations where contaminated food and water cannot be avoided, "an all-pathways approach will provide more-informed options for decision-making." -- *Suzanne Yohannan* (syohannan@iwpnews.com)

To: Christ, Lisa[Christ.Lisa@epa.gov]
Cc: DeCair, Sara[DeCair.Sara@epa.gov]; Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]; Veal, Lee[Veal.Lee@epa.gov]
From: Perrin, Alan
Sent: Tue 7/26/2016 5:35:43 PM
Subject: Re: Water PAG meeting with Congressional staffers

Thanks for the update, Lisa. Sounds like OW has everything under control. Let us know if there is any assistance we can provide. -Alan

~~~~~~~~~~~~~~

Alan Perrin
dsk 202-343-9775
mbl 202-279-0376

On Jul 26, 2016, at 1:18 PM, Christ, Lisa <Christ.Lisa@epa.gov> wrote:

Hi Sara & Alan,

We had a call with SEPW staff today at 1230pm. They conveyed Senator Boxer's concern about the PAG and EPA not extending the comment period. They asked us to provide an opportunity for more in depth conversation with stakeholder groups opposed to the PAG before taking it final. We made no commitments. We will have a similar call with Markey staff on Wednesday.

Lisa

From: DeCair, Sara
Sent: Tuesday, July 26, 2016 11:52 AM
To: Perrin, Alan <Perrin.Alan@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Cc: Veal, Lee <Veal.Lee@epa.gov>
Subject: Water PAG meeting with Congressional staffers

It sounds like OCIR is hosting a call with Markey's (and or Boxer's staff) tomorrow, Wednesday, at 4:30 pm. Peter and Eric are attending, but Sam wasn't sure if OAR people had been invited. It is possible that questions could come up regarding the broader PAG document.
~~~~~~~~~~~~~~

Lee is on leave this week, so please work directly with Alan Perrin if you have more information. Thank you!

From: Perrin, Alan
Sent: Monday, July 25, 2016 9:31 AM
To: Christ, Lisa; DeCair, Sara; Hernandez-Quinones, Samuel
Cc: Veal, Lee
Subject: RE: PAGs timeline: On track!

Hi Lisa, Do you know if this is a request to brief Sen. Markey, or a request to brief Markey's staff?

Alan Perrin, Deputy Director
Radiation Protection Division, USEPA
ofc (202) 343-9775 | mbl (202) 279-0376

From: Christ, Lisa
Sent: Friday, July 22, 2016 12:52 PM
To: DeCair, Sara <DeCair.Sara@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Cc: Veal, Lee <Veal.Lee@epa.gov>; Perrin, Alan <Perrin.Alan@epa.gov>
Subject: RE: PAGs timeline: On track!

Good news! Also, Joel has offered to help make sure intra agency review happens in a timely manner.

Bad news - I just heard that Senator Markey requested a briefing on the PAG. No other information at this point.

From: DeCair, Sara
Sent: Friday, July 22, 2016 12:41 PM

To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Cc: Veal, Lee <Veal.Lee@epa.gov>; Perrin, Alan <Perrin.Alan@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>
Subject: PAGs timeline: On track!

Sam, good discussion today. We're on the same page regarding which sections will belong in the drinking water Chapter/sections in the final PAG Manual. And since we have meetings set up next week to adjudicate the public comments with support from the contractor, EnDyna, I am hopeful we can be done with those within 7 to 10 days. We'll have an internal-use only comment spreadsheet, to keep track of our thinking.

Meantime, it's wise for us both to set up briefings for our immediate management to go through these things and ask them to help with expedited intra-agency review between Aug. 15 and 25... Our leadership can be looking at the finalized water chapter, in the finalized PAG Manual, with accompanying FR package materials (FR Notice, Comms Plan, Internal Q&A, Rollout, Desk Stmt, Fact Sheet, etc.) between Aug. 5 and 15th. Take a look at the attached project plan (unchanged from previous) to see if everyone thinks we can get OAR and OW review done by Aug. 15th, or if some reviews can be concurrent.

Thanks to all for the hard work moving this forward,

Sara

To: Grevatt, Peter[Grevatt.Peter@epa.gov]
Cc: Burneson, Eric[Burneson.Eric@epa.gov]; Christ, Lisa[Christ.Lisa@epa.gov]; Greene, Ashley[Greene.Ashley@epa.gov]; Harris, Adrienne[Harris.Adrienne@epa.gov]
From: Davis, CatherineM
Sent: Tue 7/26/2016 12:31:50 PM
Subject: Sen. Boxer Letter on Proposed Drinking Water PAGs
7.25.16 Radionuclides in Drinking Water.pdf

Hi Peter,

Attached is a letter we received late yesterday from Sen. Boxer on EPA's proposed Protective Action Guides for drinking water. SEPW minority staff asked that EPA include this in the comments on the proposal. I'll be putting it into CMS to start the regular process for responding to Congressional correspondence, but I wanted to give you a heads up in advance of the call this afternoon.

Regards,

Cathy Davis

Office of Congressional and

Intergovernmental Relations

202-564-2703

davis.catherinem@epa.gov

Send mail to:

US Environmental Protection Agency

1200 Pennsylvania Ave, NW

MC: 1305A

Washington, DC 20460

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United States Senate
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
WASHINGTON, DC 20510–6175

July 25, 2016

The Honorable Gina McCarthy
Administrator
United States Environmental Protection Agency
William Jefferson Clinton Building
1200 Pennsylvania Avenue, N.W.
Mail Code 1101A
Washington, D.C. 20460

Re: Draft Protective Action Guides for Radionuclides in Drinking Water

Dear Administrator McCarthy,

As the Ranking Member of the U.S. Senate Committee responsible for oversight of the Environmental Protection Agency (EPA), I write to express my concern about EPA's proposal to allow radioactivity in drinking water after a radiological incident at concentrations greatly above the maximum contaminant levels (MCL) set pursuant to the Safe Drinking Water Act (SDWA). Protecting the public from contamination in the water they drink is a critical duty of EPA, and I strongly urge you not to weaken radiation protection standards.

Protection of public health should be the first priority in any radiological incident response and recovery. The SDWA MCL for radionuclides in drinking water of 4 millirems (mrem) per year is designed to protect the public from increased cancer risk. Relaxing that standard could result in a much higher cancer risk, which is not acceptable.

In 2009, a similar proposal was made by the Bush Administration and subsequently withdrawn. In 2011, EPA concluded that in case of a radioactive release, the Safe Drinking Water contaminant limits would continue to be employed to protect the public from excessive radiation exposure. I am therefore troubled that EPA is now proposing to reverse that position and allow radioactivity levels far higher than SDWA MCLs -- and even higher levels than the controversial proposal it reversed upon coming into office.

The current proposal for new Protective Action Guides (PAGs) would allow strontium-90, which concentrates in bone and can cause bone cancer and leukemia, at levels 925 times the maximum contaminant limits of the Safe Drinking Water Act. It would allow iodine-131, which concentrates in the thyroid gland and can cause thyroid cancer, at concentrations 3,450 times higher than Safe Drinking Water limits. And it would allow 83 times higher levels of cesium-137, a powerful radionuclide that can irradiate the whole body.

PRINTED ON RECYCLED PAPER

EPA should not contemplate such significant reductions in public protection for something as essential to all of us as safe drinking water. The proposal is not restricted to catastrophic nuclear accidents, but covers "any release or potential release into the environment of radioactive materials in sufficient quantity to warrant consideration of protective actions."

The proposed Protective Action Guides could have a significant negative impact on public health by declaring that no protective actions need be taken to prevent people from being exposed to radioactivity in the water they drink -- even when the concentrations are much higher than the levels long deemed by EPA as the maximum acceptable contaminant limit. If there is a radiation release for which protective actions are to be considered, these Protective Action Guides will be used to determine if people will or will not be protected. As written, they would not be, even if their water contained high levels of radioactivity.

I urge you to not weaken radiation protection standards and return to a commitment to protect the American people from radioactive contamination that exceeds Safe Drinking Water Act levels.

Sincerely,

Barbara Boxer

Barbara Boxer
Ranking Member

To: Christ, Lisa[Christ.Lisa@epa.gov]
From: bredl
Sent: Tue 7/26/2016 3:59:10 AM
Subject: EPA Docket number EPA-HQ-OAR-2007-0268
160725_BREDL comments PAG.pdf

Lisa M. Christ

Standards and Risk Management Division

Office of Ground Water and Drinking Water

Mail Code 4607M

U.S. Environmental Protection Agency

1200 Pennsylvania Avenue NW.

Washington, DC 20460

Email: *christ.lisa@epa.gov*

RE: The Draft Protective Action Guide for Drinking Water

EPA Docket number EPA-HQ-OAR-2007-0268

Dear Ms. Christ:

Please find attached our comments and recommendations on the Draft Protective Action Guide for Drinking Water.

Louis A. Zeller
Blue Ridge Environmental Defense League
PO Box 88 Glendale Springs, NC 28629

Blue Ridge Environmental Defense League
www.BREDL.org PO Box 88 Glendale Springs, North Carolina 28629 BREDL@skybest.com (336) 982-2691

Lisa M. Christ
Standards and Risk Management Division
Office of Ground Water and Drinking Water
Mail Code 4607M
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue NW.
Washington, DC 20460
Email: *christ.lisa@epa.gov*

RE: The Draft Protective Action Guide for Drinking Water
EPA Docket number EPA-HQ-OAR-2007-0268

Dear Ms. Christ:

On behalf of the Blue Ridge Environmental Defense League, I write to provide comments and recommendations on the Draft Protective Action Guide for Drinking Water. The U.S. Environmental Protection Agency s-protective action guides (PAG) are supposed to help federal, state and local emergency response officials make plans for radiation emergencies. But the new Protective Actions Guides are a huge step in the wrong direction. At its recent meeting, our Board of Directors approved the following resolution:

> ***Resolved:*** **We oppose any weakening of drinking water standards for radioactivity. The Safe Drinking Water Act limits should be complied with. The Protective Action Guides should do what they are supposed to do: provide protective action guidance for authorities on how to treat contaminated water or provide alternative drinking water supplies.**
>
> Adopted by Blue Ridge Environmental Defense LeagueBoard of Directors
> Held on July 16, 2016 in Greensboro, North Carolina

Background

EPA s-Protective Action Guides Manual is an 80-page document designed to assist public officials. It guides emergency responders after a large-scale nuclear emergency, when radiation levels pose a danger to public health. On June 10, 2016, EPA requested public comment on a finalized PAG Manual to be issued by the end of the year.

Protective Action Guides are triggered by radioactive accidents of any size: a spill, a leak, a transport accident, a dirty bomb or a nuclear power plant meltdown. The PAG Manual includes numerical radiological protection criteria and recommended protective actions. During an incident with an uncontrolled source of radiation, emergency response agencies would be called upon to take action. Such intervention is termed *protective action.* Examples of protective action include:

- Evacuation of an area
- sheltering-in-place within a building or protective structure

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- administering potassium iodide (KI)
- acquiring alternate sources of drinking water
- bans on food or milk products

Comments

EPA has proposed to significantly raise the allowable levels of radioactivity in drinking water following nuclear accidents. EPA is proposing drinking water PAGs of:

- 500 mrem projected dose, for one year, to the general population.
- 100 mrem projected dose, for one year, to the most sensitive populations (e.g. infants, children, pregnant women and nursing women).

For comparison, the federal Safe Drinking Water Act standard is 4 mrem/year. If this guidance is approved, the allowable concentrations of radioactive elements would rise hundreds or thousands of times above the current Maximum Concentration Levels allowed under the Safe Drinking Water Act. After an accident, EPA could allow people to drink water with vastly higher levels of radioactivity.

The EPA must not set water PAGs that are weaker than the Safe Drinking Water Act limits; rather, the Agency should provide concrete guidance to authorities which is in accord with federal law to safeguard water supplies and to protect public health.

We recommend that the EPA should:

1. Not allow radioactive contamination of drinking water at levels orders of magnitude above Safe Drinking Water Act limits,
2. Reject adoption of less protective cleanup standards,
3. Not permit radioactive waste to be disposed of in unlicensed disposal sites, including regular municipal garbage dumps,
4. Rewrite and update FDA guidelines which allow excessive levels of food contamination,
5. Promote relocation of residents in contaminated areas with high thyroid and skin doses and for high projected cumulative whole body doses,
6. Set dose limits which recognize that estimates of cancer risks from radiation have increased significantly.

Thank you for the opportunity to present these comments. Please notify me about any future actions taken by the Agency in this matter.

Respectfully,

Louis A. Zeller
Executive Director

JERRY W. HIATT, CHP
Senior Project Manager, Radiation Safety and
Environmental Protection

1201 F Street, NW, Suite 1100
Washington, DC 20004
P: 202.739.8171
jwh@nei.org
nei.org

NUCLEAR ENERGY INSTITUTE

July 25, 2016

Ms. Lisa M. Christ
Standards and Risk Management Division
Office of Groundwater and Drinking Water
Mail Code 4607M
US Environmental Protection Agency
1200 Pennsylvania Ave. NW.
Washington, DC 20460

Subject: Nuclear Energy Institute Comments on EPA Docket ID Number EPAHQ-OAR-2007-0268; FRL-9947-55-OW Notice of Availability Draft Protective Action Guide for Drinking Water After a Radiological Incident: 81FR37589

Dear Ms. Christ:

On June 10, 2016 the Environmental Protection Agency (EPA) issued a Federal Register Notice (81 FR 37589) soliciting public comments on the EPA's proposal to include an addition to the 2013 revised interim Protective Action Guides and Planning Guidance for Radiological Incidents ("2013 revised PAG Manual," hereafter). EPA is proposing a two-tier drinking water PAG to be used during the intermediate phase of radiological emergencies. The proposed two-tiered PAG is a 500 millirem (5 mSv) per year projected dose for the general population (i.e., anyone over 15 years old, except pregnant women and women who are nursing) and a 100 millirem (1 mSv) per year projected dose for children under the age of 15, pregnant women, and nursing mothers.

The Nuclear Energy Institute (NEI)[1] appreciates the opportunity to comment on the proposed addition to the 2013 revised PAG Manual. Please note that our comments are consistent with previous comments NEI provided on behalf of the nuclear industry for the "Updates to Protective Action Guides Manual: Protective Action Guides and Planning Guidance for Radiological Incidents," 78 Federal Register 22257, April 15, 2013.

[1]The Nuclear Energy Institute (NEI) is the organization responsible for establishing unified industry policy on matters affecting the nuclear energy industry, including the regulatory aspects of generic operational and technical issues. NEI's members include all entities licensed to operate commercial nuclear power plants in the United States, nuclear plant designers, major architect/engineering firms, fuel cycle facilities, nuclear materials licensees, and other organizations and entities involved in the nuclear energy industry .

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Overall, NEI is pleased to note that as highlighted in our 2013 comment letter in lieu of using National Primary Drinking Water Regulations (NPDWR) standards EPA is proposing the two tier approach and more appropriate dose limits for the drinking water PAG.

Nonetheless, while the two tier approach is an improvement NEI still recommends that the EPA consider setting a range of 2-10 rem per year for all anticipated pathways of exposure (inclusive of consumption of food or drinking water) which would greatly provide enhanced flexibility for balancing avoidance of potential radiological health risks with risks and impacts associated with disruptive protective actions. In extreme and exigent situations where the use of contaminated food or water may be unavoidable (e.g., in the aftermath of a natural disaster or terrorist event that results in significant damage to critical infrastructure), an all-pathways approach will provide more-informed options for decision-making. In most other cases, where contaminated food and water can be effectively quarantined, the range would apply more exclusively to decision-making based on projected external exposure and inhalation of radionuclides. This recommendation is consistent with guidance from the ICRP[2]

We thank you for the opportunity to provide industry comments on the proposed rule. If you have any questions or require additional information, please contact me.

Sincerely,

Jerry W. Hiatt, CHP

[2] International Commission on Radiological Protection (ICRP). The 2007 Recommendations of the ICRP. ICRP Publication 103, Ann. ICRP 37(2-4), Elsevier, Amsterdam (2007

To: Nesky, Anthony[Nesky.Tony@epa.gov]; DeCair, Sara[DeCair.Sara@epa.gov]; Wadlington, Christina[Wadlington.Christina@epa.gov]; Christ, Lisa[Christ.Lisa@epa.gov]
From: Hernandez-Quinones, Samuel
Sent: Mon 7/25/2016 8:21:41 PM
Subject: Re: Edits to PAG webpage after the comment period ends this evening

Hi Tony,

I agree with the proposed edits.

Sam

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Environmental Protection Agency
Office of Water
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Nesky, Anthony
Sent: Monday, July 25, 2016 4:17 PM
To: DeCair, Sara; Wadlington, Christina; Christ, Lisa; Hernandez-Quinones, Samuel
Subject: Edits to PAG webpage after the comment period ends this evening

Attached in Word are my proposed edits to the PAG webpage to be published after the comment period ends. Our RPD practice after a comment period ends is to keep up all content, fact sheets etc., but to update it, noting

"EPA published the proposed drinking water Protective Action Guide (PAG) for Radiological Incidents on June 10, 2016 and accepted public comments through July 25, 2015. EPA is currently evaluating the comments."

I would also make the PAG manual the default tab, so that it is what appears when one visits the page. The Drinking Water Proposal tab would still be available upon clicking.

What do you think of this approach?

Tony Nesky

Center for Radiation Information and Outreach

Tel: 202-343-9597

nesky.tony@epa.gov

From: Nesky, Anthony
Sent: Monday, July 25, 2016 2:05 PM
To: Romero, Carmen <Romero.Carmen@epa.gov>
Cc: DeCair, Sara <DeCair.Sara@epa.gov>; Shogren, Angela <Shogren.Angela@epa.gov>
Subject: Edits to PAG Page
Importance: High

Dear Carmen:

The comment period for the proposed drinking water PAG ends tomorrow, so we will need to edit the PAG page for publication tomorrow.

On:

https://www.epa.gov/radiation/protective-action-guides-pags

Please make “PAG Manual” the default tab, and on the “Drinking Water Proposal” tab, please make the attached edits to the first two sections.

Thanks! Feel free to contact me if you have any questions.

Tony Nesky

Center for Radiation Information and Outreach

Tel: 202-343-9597

nesky.tony@epa.gov

Proposed Drinking Water Protective Action Guide (PAG) and Planning Guidance for Radiological Incidents

During a radiological emergency, radioactive material could be released into the rivers, lakes, and streams used by public water suppliers. EPA has proposed non-regulatory guidance that authorities can use to protect residents from experiencing the harmful effects from radiation in drinking water following an emergency. EPA published the proposed drinking water *Protective Action Guide (PAG) for Radiological Incidents* on June 10, 2016 and accepted public comments through July 25, 2015. EPA is currently evaluating the comments.

The purpose of EPA's Protective Active Guide (PAG) for Radiological Incidents is to guide planning and decision-making efforts by local and state officials. It is not intended for long-term or everyday use. The proposed PAG does not affect EPA's drinking water standards for radionuclides. Therefore, affected public water systems are expected to take actions to return to compliance with drinking water standards after a radiological emergency as soon as practicable.

Documents

- Notice of Availability from the Federal Register, June 10, 2016.
- Visit Docket ID EPA-HQ-OAR-2007-0268 to view the proposal and the comments received online.
  Note: If the above link does not work, copy and paste the following web address into your browser: https://www.regulations.gov/#!docketDetail;D=EPA-HQ-OAR-2007-0268

To: Burneson, Eric[Burneson.Eric@epa.gov]; Christ, Lisa[Christ.Lisa@epa.gov]
From: Greene, Ashley
Sent: Fri 7/22/2016 7:01:01 PM
Subject: RE: PAGs Briefing for SEPW

Just to clarify, there are actually two separate briefings on the drinking water PAG – one for Sen. Markey's staff and one for SEPW minority staff. We have some additional info on the SEPW request, but we do not have more from Sen. Markey's staff yet. Both of these briefing calls are scheduled for Tuesday with a combined prep meeting on Monday.

Thanks and sorry for any confusion.

From: Greene, Ashley
Sent: Friday, July 22, 2016 2:16 PM
To: Burneson, Eric <burneson.eric@epa.gov>; Christ, Lisa <christ.lisa@epa.gov>
Subject: PAGs Briefing for SEPW

Good afternoon,

We received a request from OCIR to provide a briefing call on the drinking water PAG for both Sen. Markey's staff and SEPW minority staff. OCIR has not heard specifically what Sen. Markey's staff are looking for, but SEPW has provided the following:

Sen. Boxer has been very concerned about the issue and levels permitted. She has opposed changes like this in the past. From their perspective, it is critical the deadline be extended, and it is likely that Sen. Boxer will push for that extension herself. They would like an overview, and I think they're most interested in discussing criticisms that EPA has received and how the Agency is responding. They have heard from community members (presumably in California) who are extremely concerned and who strongly oppose as well.

You should have both received meeting invites for a prep meeting on Monday and the actual briefing on Tuesday. Peter will also participate.

Thanks,

Ashley

****

Ashley Greene

Special Assistant

Office of Ground Water and Drinking Water

U.S. Environmental Protection Agency

Phone: (202) 566-1738

Email: greene.ashley@epa.gov

****

To: Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]
Cc: Veal, Lee[Veal.Lee@epa.gov]; Perrin, Alan[Perrin.Alan@epa.gov]; Christ, Lisa[Christ.Lisa@epa.gov]
From: DeCair, Sara
Sent: Fri 7/22/2016 4:41:29 PM
Subject: PAGs timeline: On track!
Finalize PAG Manual with Water 6-13-2016.docx

Sam, good discussion today. We're on the same page regarding which sections will belong in the drinking water Chapter/sections in the final PAG Manual. And since we have meetings set up next week to adjudicate the public comments with support from the contractor, EnDyna, I am hopeful we can be done with those within 7 to 10 days. We'll have an internal-use only comment spreadsheet, to keep track of our thinking.

Meantime, it's wise for us both to set up briefings for our immediate management to go through these things and ask them to help with expedited intra-agency review between Aug. 15 and 25... Our leadership can be looking at the finalized water chapter, in the finalized PAG Manual, with accompanying FR package materials (FR Notice, Comms Plan, Internal Q&A, Rollout, Desk Stmt, Fact Sheet, etc.) between Aug. 5 and 15th. Take a look at the attached project plan (unchanged from previous) to see if everyone thinks we can get OAR and OW review done by Aug. 15th, or if some reviews can be concurrent.

Thanks to all for the hard work moving this forward,

Sara

To: Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]; Christ, Lisa[Christ.Lisa@epa.gov]; Veal, Lee[Veal.Lee@epa.gov]
From: DeCair, Sara
Sent: Thur 7/21/2016 8:49:09 PM
Subject: Fwd: Public comment for docket # EPA-HQ-OAR-2007-0268; FRL-9947-55-OW

Just FYI

Sent from my iPhone

Begin forwarded message:

From: "Perrin, Alan" <Perrin.Alan@epa.gov>
Date: July 21, 2016 at 1:39:13 PM PDT
To: "Lee, Raymond" <Lee.Raymond@epa.gov>
Cc: "DeCair, Sara" <DeCair.Sara@epa.gov>, "Cyran, Carissa" <Cyran.Carissa@epa.gov>, "Atkinson, Emily" <Atkinson.Emily@epa.gov>
Subject: FW: Public comment for docket # EPA-HQ-OAR-2007-0268; FRL-9947-55-OW

Ray, please touch base with Sara on this if you have questions. These will need to go into OW's docket for the DW PAG. FYI, the comment period closes on Monday, July 25. Let me know if any issues come up.

Thanks, Alan

Alan Perrin, Deputy Director
Radiation Protection Division, USEPA
ofc (202) 343-9775 | mbl (202) 279-0376

From: Edwards, Jonathan
Sent: Thursday, July 21, 2016 4:08 PM
To: Atkinson, Emily <Atkinson.Emily@epa.gov>; McCabe, Janet <McCabe.Janet@epa.gov>; Lee, Raymond <Lee.Raymond@epa.gov>
Cc: Cyran, Carissa <Cyran.Carissa@epa.gov>; Stewart, Lori <Stewart.Lori@epa.gov>; Perrin, Alan <Perrin.Alan@epa.gov>
Subject: RE: Public comment for docket # EPA-HQ-OAR-2007-0268; FRL-9947-55-OW

+ Ray Lee --- Ray, will you team up with Carissa to tackle these incoming messages to

Janet and get the appropriate messages to the docket? Thanks --Jon

From: Atkinson, Emily
Sent: Thursday, July 21, 2016 2:44 PM
To: McCabe, Janet <McCabe.Janet@epa.gov>
Cc: Edwards, Jonathan <Edwards.Jonathan@epa.gov>; Cyran, Carissa <Cyran.Carissa@epa.gov>; Stewart, Lori <Stewart.Lori@epa.gov>
Subject: RE: Public comment for docket # EPA-HQ-OAR-2007-0268; FRL-9947-55-OW

+ Carissa for help with the docket.

Jon and Carissa - Attached are the two types of form emails we are getting . . . . let me know how you all want to receive the electronic copies so they can get docketed. At the moment we have 1800+ emails between the two campaigns.

Janet – I was able to set up an Outlook rule yesterday for the first campaign to direct the email out of your in box and to a folder. This second campaign started after you left for ECOS and I cannot setup a new rule for it until you are back in the office and I can login with your badge. For now, I will monitor the incoming and manually move them to a folder.

From: McCabe, Janet
Sent: Thursday, July 21, 2016 1:53 PM
To: Atkinson, Emily <Atkinson.Emily@epa.gov>
Cc: Edwards, Jonathan <Edwards.Jonathan@epa.gov>
Subject: Fwd: Public comment for docket # EPA-HQ-OAR-2007-0268; FRL-9947-55-OW

I seem to have two types of mass emails coming in related to our PAGS guidelines. At some point could you please set up a folder for these? The ones that are formal comments, like this one, need to get sent to the docket, if they aren't also going directly there.

The other set have mostly been sent to my clutter file.

We can do this tomorrow.

Thanks

Sent from my iPhone

Begin forwarded message:

From: Wendy Oser <act@fwwatch.org>
Date: July 21, 2016 at 1:44:14 PM EDT
To: Janet McCabe <mccabe.janet@epa.gov>
Subject: Public comment for docket # EPA-HQ-OAR-2007-0268; FRL-9947-55-OW
Reply-To: Wendy Oser <woser@comcast.net>

Jul 21, 2016

Janet McCabe

Dear McCabe,

I am very concerned about the EPA's revised Protective Action Guides for responding to radiological releases.

These PAGs would significantly weaken radiation protections for me and my family by increasing the amount of radioactivity allowed in my drinking water.

This rule change is unacceptable. Everyone should have access to safe drinking water at all times -- nobody should have to consume highly radioactive water, no matter the emergency.

I want to see you withdraw the proposed increase in radiation levels.

Sincerely,

Ms. Wendy Oser
1439 Santa Fe Ave
Berkeley, CA 94702-1027
woser@comcast.net

To: Christ, Lisa[Christ.Lisa@epa.gov]
From: Bangser, Paul
Sent: Tue 7/19/2016 8:04:07 PM
Subject: RE: Call from Env'tal Group

I just forwarded the voice mail. It's not Diana, but someone else from NY Sierra Club.

Thanks,

Paul Bangser
EPA Office of General Counsel
202-564-5479
bangser.paul@epa.gov

From: Christ, Lisa
Sent: Tuesday, July 19, 2016 2:55 PM
To: Bangser, Paul; Hernandez-Quinones, Samuel
Cc: Wehling, Carrie
Subject: RE: Call from Env'tal Group

Paul,
Please forward the voicemail message to me and I'll return the call. If it was Diana D'Arrigo Eric already left her a message regarding our decision.
Lisa

-----Original Message-----
From: Bangser, Paul
Sent: Tuesday, July 19, 2016 1:49 PM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Cc: Wehling, Carrie <Wehling.Carrie@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>
Subject: Call from Env'tal Group

Lisa, Sam,

A person from one of the environmental groups called and left a message with Steve Neugeboren in my office asking what EPA's decision is on their request for more time to comment. Steve has forwarded the voice mail to me.

Do you want to call this person back? Would you like me to call? Do you want to wait until the letter is signed?

Thanks,

Paul Bangser
EPA Office of General Counsel
202-564-5479
bangser.paul@epa.gov

From: Hernandez-Quinones, Samuel
Sent: Tuesday, July 19, 2016 1:32 PM
To: Bangser, Paul
Cc: Wehling, Carrie; Christ, Lisa
Subject: RE: Request for Review - Letter Denying Extension

Hi Paul,
I will incorporate your edits/comments. I know you have some additional questions, but please let me

know if we are ok to move forward with this.

Thanks
Sam

==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

-----Original Message-----
From: Bangser, Paul
Sent: Tuesday, July 19, 2016 12:31 PM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Cc: Wehling, Carrie <Wehling.Carrie@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>
Subject: RE: Request for Review - Letter Denying Extension

I am attaching a few editorial comments in redline.

I have a couple of other minor questions and will call.

Thanks,

Paul Bangser
EPA Office of General Counsel
202-564-5479
bangser.paul@epa.gov

From: Hernandez-Quinones, Samuel
Sent: Tuesday, July 19, 2016 9:30 AM
To: Bangser, Paul
Cc: Wehling, Carrie; Christ, Lisa
Subject: Request for Review - Letter Denying Extension

Hi Paul,

We received a request on the docket from a group of stakeholders to extent the comment period on the DW Radiation PAGs. Eric has requested that this letter needs to be signed and sent today to the requestors. We want to send the formal response before the comment period ends (they originally requested a response by 7-15-16).

Let us know if you can review this letter and provide any comments to us by today.

Thanks
Sam

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

To: Bradford, Charlotte[Bradford.Charlotte@epa.gov]
Cc: Christ, Lisa[Christ.Lisa@epa.gov]; Burneson, Eric[Burneson.Eric@epa.gov]
From: Hernandez-Quinones, Samuel
Sent: Tue 7/19/2016 5:58:40 PM
Subject: RE: Draft letter to Ms. D'Arrigo
Burneson response to extension request Rad PAGs shqV2 Jul-19.docx

Hi Charlotte,

I have made edits to the attached letter as suggested by OGC.

Please print this letter for Eric's review.

Thanks

Sam

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water

Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Bradford, Charlotte
Sent: Tuesday, July 19, 2016 11:44 AM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Subject: Draft letter to Ms. D'Arrigo

Sam,

Draft of letter formatted, as much as possible. Waiting for your input.

Charlotte Bradford

OW OGWDW Standards & Risk Management Division

Room 2331D WJC East

202-564-1187

Ms. Dianne D'Arrigo
Nuclear Information and Resource Service
Takoma Park, MD

Dear Ms. D'Arrigo:

I am responding to your letter which requests an extension of 120 days to the comment period for the proposed EPA Draft Protective Action Guide for Drinking Water after a radiological incident. EPA has provided a 45-day comment period for this action, which is scheduled to close on Monday July 25, 2016. After reviewing the request, EPA believes that the reasons cited in the letter do not justify issuing an extension of the comment period.

Your request indicates that the extension in the comment period is needed due to the complexity of the proposal and the need to evaluate information cited in the federal register notice. You indicate that excerpts of one supporting document (NCRP 174) have only recently been posted to the web. In addition the letter states that comments on the drinking water proposal need to consider the impacts of the overall recommendations in the PAG manual since the effects on the public from other exposure routes are cumulative. The documents made available for public comment are 22 pages in length and they list clearly the reference documents that the Agency consulted to develop the proposed PAG. In addition, the Agency published the revised draft PAG manual in 2013 and the draft document has been publicly available since that time. As for the claim regarding the availability of the reference document NCRP-174, this report has been publicly available from the National Council on Radiation Protection and Measurements since 2013. However, in response to a request from a member of the public, EPA placed an authorized excerpt of the copyrighted document into the docket for those commenters who wanted to review the reference but chose not to obtain the reference from National Council on Radiation Protection and Measurements.

You also state that there are some confusing legal implications that need clarification before submitting comments, such as whether the PAGs relieve a polluter from legal liability. EPA does not believe that this issue warrants an extension of the comment period because it is outside the scope of this draft PAG.

Lastly you state that the proposal is not clear regarding the length of time that the drinking water PAG would apply. EPA disagrees with this statement since the proposal is clear that the recommendations for drinking water are limited to one year duration following a radiological incident affecting drinking water.

EPA believes that the 45 day comment period we have provided allows ample opportunity to members of the public to develop their input and recommendations on the drinking water proposal.

Eric Burneson P.E., Division Director

Division of Standards and Risk Management
Office of Ground Water and Drinking Water
Office of Water

To: Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]
Cc: Wehling, Carrie[Wehling.Carrie@epa.gov]; Christ, Lisa[Christ.Lisa@epa.gov]
From: Bangser, Paul
Sent: Tue 7/19/2016 5:45:33 PM
Subject: RE: Request for Review - Letter Denying Extension

Yes, you can move forward with it.

Thanks,

Paul Bangser
EPA Office of General Counsel
202-564-5479
bangser.paul@epa.gov

From: Hernandez-Quinones, Samuel
Sent: Tuesday, July 19, 2016 1:32 PM
To: Bangser, Paul
Cc: Wehling, Carrie; Christ, Lisa
Subject: RE: Request for Review - Letter Denying Extension

Hi Paul,
I will incorporate your edits/comments. I know you have some additional questions, but please let me know if we are ok to move forward with this.

Thanks
Sam

==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

-----Original Message-----
From: Bangser, Paul
Sent: Tuesday, July 19, 2016 12:31 PM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Cc: Wehling, Carrie <Wehling.Carrie@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>
Subject: RE: Request for Review - Letter Denying Extension

I am attaching a few editorial comments in redline.

I have a couple of other minor questions and will call.

Thanks,

Paul Bangser

EPA Office of General Counsel
202-564-5479
bangser.paul@epa.gov

From: Hernandez-Quinones, Samuel
Sent: Tuesday, July 19, 2016 9:30 AM
To: Bangser, Paul
Cc: Wehling, Carrie; Christ, Lisa
Subject: Request for Review - Letter Denying Extension

Hi Paul,

We received a request on the docket from a group of stakeholders to extent the comment period on the DW Radiation PAGs. Eric has requested that this letter needs to be signed and sent today to the requestors. We want to send the formal response before the comment period ends (they originally requested a response by 7-15-16).

Let us know if you can review this letter and provide any comments to us by today.

Thanks
Sam

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

I am responding to your letter which request an extension of 120 days to the comment period for the proposed EPAs Draft Protective Action Guide for Drinking Water after a radiological incident. EPA has provided a 45-day comment period for this action, which is scheduled to close on Monday July 25, 2016. After reviewing the request, EPA believes that the reasons cited in the letter do not justify issuing an extension of the comment period.

Your request indicates that the extension in the comment period is needed due to the complexity of the proposal and the need to evaluate information cited in the federal register notice. You indicate that excerpts of one supporting document (NCRP 174) has only recently been posted to the web. In addition the letter states that comments on the drinking water proposal need to consider the impacts of the overall PAG manual since the effects on the public from other exposure routes are cumulative. The documents made available for public comment are X pages in length and they list clearly the reference documents that the Agency consulted to develop the proposed PAG. In addition, the Agency published the revised draft PAG manual in 2013 and the draft document has been publicly available since that time. As for the claim regarding the availability of the reference document NCRP-174, this report has been publicly available from the National Council on Radiation Protection and Measurements since 2013. However, in response to a request from a member of the public, EPA placed an authorized excerpt of the copyrighted document into the docket for those commenters who wanted to review the reference but chose not to obtain the reference from National Council on Radiation Protection and Measurements.

You indicate that additional time is needed to develop comments to address the legal implications as it relates to the "legal liabilities" of any entity responsible from polluting the environment with radiation. EPA does not believe that this issue warrants an extension of the comment period because "legal liability" is outside the scope this draft PAG.

Lastly you state that the proposal is not clear regarding the length of time that the drinking water PAG would apply. EPA disagrees with this statement since the proposal is clear that the recommendations for drinking water are limited to one year duration following a radiological incident affecting drinking water.

EPA believes that the currently open 45 day comment period provides ample opportunity to members of the public to develop their input and recommendations on the drinking water proposal, in addition the 45 day comment period is an adequate timeframe for members of the public to develop comments within the scope of interest as requested by EPA.aA

To: Burneson, Eric[Burneson.Eric@epa.gov]; Greene, Ashley[Greene.Ashley@epa.gov]; Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]
Cc: Harris, Adrienne[Harris.Adrienne@epa.gov]; Huff, Lisa[Huff.Lisa@epa.gov]; Christ, Lisa[Christ.Lisa@epa.gov]
From: Flaharty, Stephanie
Sent: Mon 7/18/2016 9:10:40 PM
Subject: RE: Urgent Info. possibility of comment period extension on PAGs. FW: Docket Number (EPA-HQ-OAR-2007-0268; FRL-9947-55-OW)

Eric, thanks for the update!

From: Burneson, Eric
Sent: Monday, July 18, 2016 4:57 PM
To: Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>; Greene, Ashley <Greene.Ashley@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Cc: Harris, Adrienne <Harris.Adrienne@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>
Subject: RE: Urgent Info. possibility of comment period extension on PAGs. FW: Docket Number (EPA-HQ-OAR-2007-0268; FRL-9947-55-OW)

I left a voice mail message for Diane D'Arrigo (NIRS) informing her that we will not be extending the comment period because we have determined that commenters have had adequate time to review the draft proposed PAG and the associated materials. Sam is revising the draft letter based on my comments and I will have a draft to share with Peter tomorrow.

From: Burneson, Eric
Sent: Monday, July 18, 2016 1:21 PM
To: Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>; Greene, Ashley <Greene.Ashley@epa.gov>; Hernandez-Quinones, Samuel <hernandez.samuel@epa.gov>
Cc: Harris, Adrienne <Harris.Adrienne@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>; Christ, Lisa (Christ.Lisa@epa.gov) <Christ.Lisa@epa.gov>
Subject: RE: Urgent Info. possibility of comment period extension on PAGs. FW: Docket Number (EPA-HQ-OAR-2007-0268; FRL-9947-55-OW)

Sam is working on the reply letter denying the extension.

From: Flaharty, Stephanie
Sent: Monday, July 18, 2016 1:12 PM
To: Greene, Ashley <Greene.Ashley@epa.gov>
Cc: Harris, Adrienne <Harris.Adrienne@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>
Subject: Urgent Info. possibility of comment period extension on PAGs. FW: Docket Number (EPA-HQ-OAR-2007-0268; FRL-9947-55-OW)
Importance: High

It's too late for an extension via FRN … the close of the comment period is 7/21. So we will have to send a FRN that re-opens the comment period if that is what we want…

From: Flaharty, Stephanie
Sent: Monday, July 18, 2016 1:04 PM
To: Greene, Ashley <Greene.Ashley@epa.gov>
Cc: Harris, Adrienne <Harris.Adrienne@epa.gov>
Subject: RE: Docket Number (EPA-HQ-OAR-2007-0268; FRL-9947-55-OW)

Hi Ashley,

I haven't heard. Lisa is out so check with Lisa Huff (cc Eric)… Dan Olson may also have some idea about it. We will need to do a FRN… Keep me posted…

Steph

From: Greene, Ashley
Sent: Monday, July 18, 2016 1:01 PM
To: Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>
Cc: Harris, Adrienne <Harris.Adrienne@epa.gov>

Subject: FW: Docket Number (EPA-HQ-OAR-2007-0268; FRL-9947-55-OW)

Hi Steph,

Do you have any additional info on this PAGs public comment extension? If not, I'll check in with Eric.

Thanks,

Ashley

From: Gude, Karen
Sent: Monday, July 18, 2016 12:58 PM
To: Greene, Ashley <Greene.Ashley@epa.gov>
Cc: Harris, Adrienne <Harris.Adrienne@epa.gov>
Subject: FW: Docket Number (EPA-HQ-OAR-2007-0268; FRL-9947-55-OW)

Ashley,

Just a heads up, you may be getting a call from Diane D'Arrigo (NIRS) seeking status on a request to extend the public comment period for the PAGs guidance. When I asked Joel about this this AM, he indicated that he was aware of the request and that it was with OGWDW…I conveyed this to Diane, but she is calling and email anyone she can reach for additional info. I don't know if there is a status update that can be provided to her.

Thanks,

Karen Gude, Special Assistant

U.S. Environmental Protection Agency

Office of Water

Phone: (202) 564-0831

From: Penman, Crystal
Sent: Monday, July 18, 2016 8:29 AM
To: Gude, Karen <Gude.Karen@epa.gov>
Subject: FW: Docket Number (EPA-HQ-OAR-2007-0268; FRL-9947-55-OW)

From: Diane D'Arrigo [mailto:dianed@nirs.org]
Sent: Monday, July 18, 2016 8:23 AM
To: Penman, Crystal <Penman.Crystal@epa.gov>; Beauvais, Joel <Beauvais.Joel@epa.gov>
Cc: Diane D'Arrigo <dianed@nirs.org>
Subject: Fwd: Docket Number (EPA-HQ-OAR-2007-0268; FRL-9947-55-OW)

Sent from my iPhone

Begin forwarded message:

From: Diane D'Arrigo <dianed@nirs.org>
Date: July 15, 2016 at 5:49:02 PM EDT
To: "Beauvais.joel@Epa.gov" <Beauvais.joel@Epa.gov>
Cc: Diane D'Arrigo <dianed@nirs.org>
Subject: FW: Docket Number (EPA-HQ-OAR-2007-0268; FRL-9947-55-OW)

Joel Beauvais, Deputy Assistant Administrator

Office of Water

US Environmental Protection Agency

202 564 5700

Beauvais.joel@epa.gov

Dear Joel Beauvais:

Below and attached are requests sent last week from 60 organizations and elected officials for extension on the comment period for the EPA Water Protective Action Guides for 120 more days.

We understand you will decide on this request. We had asked to know by Friday July 15th (today) but have not heard and it is at close of business.

Please do let us know your decision.

Thank you,

Diane D'Arrigo

NIRS

301 270 6477 x 15

Mobile 202 841 8588

dianed@nirs.org

From: Mary Olson
Sent: Friday, July 08, 2016 10:09 AM
To: a-and-r-docket@epa.gov
Subject: FW: Docket Number (EPA-HQ-OAR-2007-0268; FRL-9947-55-OW)

Same attached as PDF

To: Office of Ground Water and Drinking Water (draft Radioactive Water PAGs) Docket Number **(EPA-HQ-OAR-2007-0268; FRL-9947-55-OW)**

From: Fifty-Eight Organizations and two elected officials (undersigned) via Nuclear Information and Resource Service (NIRS) Contact: Mary Olson maryo@nirs.org 828-252-8409, Diane D'Arrigo (Primary Contact after July 13) dianed@nirs.org 301-270-6477

NOTE: the co-signers to this request have been compiled as a courtesy to the Agency. We have emails from each organization requesting they be signed on this request.

RE: Request for 120 day extension to comment on EPA's Draft Protective Action Guide (PAG) for Drinking Water After a Radiological Incident, EPA-HQ-OAR-2007-0268; FRL-9947-55-OW

Dear Lisa Christ, Office of Air and Radiation, and Office of Water:

We ask that EPA extend the public comment period on the Draft Protective Action Guide (PAG) for Drinking Water After a Radiological Incident (draft Radioactive Water PAGs) for 120 days beyond the July 25th deadline.

The changes proposed in the EPA draft Radioactive Water PAGs are extremely significant. They are complicated on their own and additionally by their proposed inclusion in the Draft PAGs (2013 PAG Manual at https://www.epa.gov/radiation/protective-action-guides-pags) on which many of us commented in 2013. Commenting must be done in conjunction with the existing PAG Manual since they would be combined in practice. Since radiation's effects are multiple, additive, cumulative and synergistic, we need to consider the impacts of proposed 100 to 500 millirems/year from water (Water PAG) in light of that from food, air, etc. (PAG) and bioaccumulation.

We appreciate EPA's acknowledgement in this draft of the reality that different life stages are differently impacted by radiation. The portion of the proposal recommending different levels of radioactive water contamination for different life stages adds complexity requiring more than technical analysis and discussion to comment meaningfully, especially when developing organizational positions and responses. Practical and philosophical issues must be considered as well. It appears that the life stage sensitivity is only being addressed in the Water PAG, not the whole PAG so this must be considered and assessed as well.

Excerpts to one of the supporting documents (NCRP-174) on which the proposed Water PAG is based have just been put up on the www.regulations.gov website (in July) but not

the whole document in its entirety. The excerpts were not publically available for nearly half of the current comment period. We request this report and all other information used and supporting the Water PAGs be made publicly available, free of charge and that the comment period be extended to accommodate full review.

There are some confusing legal implications that need clarification before submitting comments. The length of time for which PAG guidance would apply is not expressly limited yet assumptions are made that it will be for limited periods only. Although the Federal Register says the PAG guidance levels don't supersede the Safe Drinking Water Act levels (maximum concentration levels) does the PAG relieve the polluter from legal liability? Clarification of these questions would be helpful and certainly additional time is needed to provide meaningful comments.

We request a 120 day extension. We also respectfully ask that you decide and notify us of your decision by July 15th.

Thank you for consideration of this extension request.

Sincerely,

Timothy Judson, Executive Director

Nuclear Information and Resource Service

Takoma Park, MD

Barbara Gottlieb, Environment & Health Director

Physicians for Social Responsibility

Washington, DC

Lynn Thorp

Clean Water Action

Washington, DC

Catherine Lincoln

Committee to Bridge the Gap

Ben Lomond, CA

Ken Bossong
SUN DAY Campaign

Takoma Park, MD

Cindy Folkers

Beyond Nuclear

Takoma Park, MD

Deb Katz

Citizen Awareness Network

Rowe, MA

Dr. Gwen DuBois, President

Chesapeake Physicians for Social Responsibility

Baltimore, MD

Toni Iseeman, Mayor pro tem of Laguna Beach

Laguna Beach, CA

Pam Patterson, Mayor

San Juan Capistrano, CA

Elaine Holder, President

San Luis Obispo Mothers for Peace

San Luis Obispo, CA

Jane Williams, Executive Director

California Communities Against Toxics

Rosamond, CA

Marylia Kelley,

Tri-Valley Communities Against a Radioactive Environment

Livermore, CA

Joni Arends
Concerned Citizens for Nuclear Safety
Santa Fe, NM

Don Safer

Tennessee Environmental Coalition

Nashville, Tennessee

Becky D. Rafter, MPA, Executive Director

Georgia Women's Action for New Directions

Atlanta, GA

Dave Kraft

Nuclear Energy Information Service

Chicago, IL

Robert M. Gould, MD, President

San Francisco Bay Area Chapter

Physicians for Social Responsibility

Robert K. Musil, Ph.D., M.P.H.

President & CEO, Rachel Carson Council

Ruth Thomas

Environmentalists Inc.

Bethesda, MD

Sarah Fields

Uranium Watch

Moab, Utah

Jessica Azulay, Program Director

Alliance for a Green Economy

Syracuse, NY

Pamela Hughes

Sierra Club Niagara Group Chair

New York State, Atlantic Chapter

Iris Marie Bloom
Executive Director
Protecting Our Waters

NY, NJ, PA

Debra Borowiecki, Co-coordinator
LAWPA - Local Authority Western PA
Murrysville, PA

Paula Gotsch

Grandmothers, Mothers and More for Energy Safety

Normandy Beach, NJ

Columbus, NC

Louis A. Zeller

Blue Ridge Environmental Defense League

VA, NC, SC, TN, AL, GA

Connie Kline

Ohio CARE - Citizens Against a Radioactive Environment

Cleveland, OH

Bob Ciesielski, Energy Committee Chair
Sierra Club Atlantic Chapter

Albany, NY

Jenny Lisak, Co-director

Pennsylvania Alliance for Clean Water and Air

Punxsutawney, PA

Dr. Lewis Cuthbert

Alliance for a Clean Environment

Pottstown, PA. 19465

Priscilla Star

Coalition Against Nukes

Wainscott, NY

Barbara Warren

Citizens' Environmental Coalition

New York

Michael J. Keegan

Coalition for a Nuclear Free Great Lakes

Monroe, MI

Alice Hirt

Don't Waste Michigan

Holland, MI

Regina Minniss

Crabshell Alliance

Baltimore, Maryland

Wes Raymond - Administrator
Citizens for Alternatives to Chemical Contamination
Lake, Michigan

Lynda Schneekloth, Advocacy Chair

Western New York Environmental Alliance

Buffalo, New York

Ed Oles, President

Citizens To Preserve Ligonier Valley

Ligonier, PA

Jan Milburn, President

Westmoreland Marcellus Citizens' Group

Westmoreland County , PA

Kristen Combs

Green Party of Pennsylvania

Philadelphia, PA

Briget Shields

Marcellus Protest/Protect Our Parks Pittsburgh

Pittsburgh, PA

Gillian Graber

Protect PT

Trafford, PA

Ellen Connett

Fluoride Action Network

Canton, New York

Susan Gordon, Coordinator

Multicultural Alliance for a Safe Environment

Stephen Brittle

Don’t Waste Arizona

New Mexico

Greg Wingard, Executive Director

Waste Action Project

Covington, WA

Rita M Conn

Let Laguna Vote, and, Secure Nuclear Waste

Laguna Beach, California

Gary Headrick
San Clemente Green
San Clemente, CA

Faye More, Chair

Port Hope Community Health Concerns Committee

Port Hope, Ontario

Theresa A. McClenaghan
Executive Director and Counsel
Canadian Environmental Law Association

Toronto, ON

Tanya Keefe

Great Lakes Environmental Alliance

Phoenix, Arizona

Mark Haim

Mid-Missouri Peaceworks/

Missourians for Safe Energy

Columbia, Missouri

Michael Welch

Redwood Alliance

Arcata, CA

Jessie Collins

Citizens' Resistance at Fermi Two (CRAFT)

MI
Ziggy Kleinau,

Co-founder and Outreach Director (BPEG)

Binbrook, Ontario

Ryan Metcalfe

KIMO Denmark

Kommunernes Internationale Miljøorganisation

(Local authorities environmental organisation)

Port Huron, MI

Mary Olson

Nuclear Information and Resource Service, Southeast

maryo@nirs.org

www.nirs.org

828-252-8409 / 828-242-5621 cell

To: Burneson, Eric[Burneson.Eric@epa.gov]
Cc: Christ, Lisa[Christ.Lisa@epa.gov]; Huff, Lisa[Huff.Lisa@epa.gov]
From: Hernandez-Quinones, Samuel
Sent: Mon 7/18/2016 7:50:10 PM
Subject: Fw: NCRP cite request on EPA-HQ-OAR-2007-0268

Hi Eric,

The excerpt was uploaded on July 1 in response to a request that was sent to Lisa on June 27. Office of Air had permission to publish part of the document, the whole document was not published since it is copyrighted, but it is a publicly available document.

Let me know if I should modify the draft response letter.

Sam

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Environmental Protection Agency
Office of Water
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: DeCair, Sara
Sent: Monday, July 18, 2016 3:37 PM
To: Hernandez-Quinones, Samuel
Cc: Veal, Lee
Subject: Fwd: NCRP cite request on EPA-HQ-OAR-2007-0268

FYI

Sent from my iPhone

Begin forwarded message:

From: "Christ, Lisa" <Christ.Lisa@epa.gov>
Date: June 30, 2016 at 6:31:48 AM PDT

To: "Lee, Ray" <Lee.Ray@epa.gov>
Cc: "DeCair, Sara" <DeCair.Sara@epa.gov>
Subject: FW: NCRP cite request on EPA-HQ-OAR-2007-0268

Hi Ray,

Just wondering if you were able to upload the excerpt into the docket?

Thank you –

Lisa

From: DeCair, Sara
Sent: Tuesday, June 28, 2016 5:55 PM
To: Christ, Lisa <Christ.Lisa@epa.gov>
Cc: Veal, Lee <Veal.Lee@epa.gov>; Nesky, Anthony <Nesky.Tony@epa.gov>
Subject: Re: NCRP cite request on EPA-HQ-OAR-2007-0268

Lisa, good news! We have permission to post an excerpt from the NCRP Report No. 174. I have the pages selected and in the morning will have a properly footer-marked permission-granted version ready for our own Ray Lee to add to the docket so the requestor and others can refer to it.

From: Christ, Lisa
Sent: Monday, June 27, 2016 8:57 AM
To: DeCair, Sara <DeCair.Sara@epa.gov>
Subject: FW: EPA DW pags EPA-HQ-OAR-2007-0268

Hi Sara,

Sam is out this week…wondering if you have access to NCRP Report 174? If so, I can place it in the docket, unless you already have it as a supporting document for the overall PAG Manual. Please let me know.

Thanks-

Lisa

From: Cindy Folkers [mailto:cindy@beyondnuclear.org]
Sent: Monday, June 27, 2016 8:37 AM
To: Christ, Lisa <Christ.Lisa@epa.gov>
Subject: EPA DW pags EPA-HQ-OAR-2007-0268

Hello, Lisa,

The pag mentions deriving its limit for pregnancy using this document: NCRP report 174 (p 7 in pag doc)

Is there non-cost public access to this document? I would expect so since NCRP is a congressionally chartered research body and EPA is basing recommendations on this document which is arcane and expensive to acquire.

Please advise me where I can access this document. Since it is over 300 pages, the sooner the better since the public has only a month left for comment.

Thank you,

Cindy Folkers

Radiation and Health Hazard Specialist

Beyond Nuclear

--

Cindy Folkers
Radiation & Health Specialist
Beyond Nuclear
6930 Carroll Ave #400
Takoma Park, MD 20912
301-270-2209

To: Burneson, Eric[Burneson.Eric@epa.gov]
Cc: Christ, Lisa[Christ.Lisa@epa.gov]
From: Hernandez-Quinones, Samuel
Sent: Fri 7/15/2016 6:47:26 PM
Subject: Re: Draft Response to comment extension request
PAG H2O ext req2016.pdf

Eric,

FYI, I am attaching a copy of the letter requesting the extension.

Thanks

Sam

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Environmental Protection Agency
Office of Water
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Hernandez-Quinones, Samuel
Sent: Friday, July 15, 2016 2:43:05 PM
To: Burneson, Eric
Cc: Christ, Lisa
Subject: Draft Response to comment extension request

Hi Eric,

This is the draft staff response to the request to extent the comment period on the drinking water PAG proposal. I also sent this to the office of air and I expect to get comments from them.

I will send you any feedback I receive from them.

Thanks

Sam

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Environmental Protection Agency
Office of Water
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

To: Burneson, Eric[Burneson.Eric@epa.gov]
Cc: Christ, Lisa[Christ.Lisa@epa.gov]
From: Hernandez-Quinones, Samuel
Sent: Fri 7/15/2016 6:43:05 PM
Subject: Draft Response to comment extension request
Response to comment extension request PAGs.docx

Hi Eric,

This is the draft staff response to the request to extent the comment period on the drinking water PAG proposal. I also sent this to the office of air and I expect to get comments from them.

I will send you any feedback I receive from them.

Thanks

Sam

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Environmental Protection Agency
Office of Water
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

On July 13, 2016 EPA received a letter from a group of Stakeholders requesting a 120-day extension of the comment period for the EPAs Draft Protective Action Guide for Drinking Water after a radiological incident. EPA has provided a 45-day comment period for this action, which is scheduled to close on Monday July 25, 2016.

The letter, which was undersigned by 57 people representing environmental advocacy organizations, indicates that the extension in the comment period is needed due to the complexity of the proposal and the need to evaluate information cited in the federal register notice. In addition the requestors state that comments on the drinking water proposal need to consider the impacts of the overall PAG manual since the effects on the public from other exposure routes are cumulative.

All the information used by EPA in deriving the protective actions is publicly available and all reasonable efforts have been taken to be as transparent as possible with the public to access the data sources used to develop the proposal. In addition, since 2013 the revised draft PAG manual has been publicly available and it provides meaningful information about the protective actions and recommendations to protect the public from exposures, other than drinking water, during a radiological contamination incident.

The requestors also indicate that additional time is needed to develop comments to address the legal implications as it relates to the "legal liabilities" of any entity responsible from polluting the environment with radiation. EPA does not believe that this issue warrants an extension of the comment period because the issue about "legal liability" is outside the scope of the comments EPA is pursuing with this action.

The requestors also state that the proposal is not clear regarding the length of time that the drinking water PAG would apply. The staff strongly disagrees with this statement since the proposal is clear and very explicit in that the recommendations for drinking water are limited to one year duration following a radiological incident affecting drinking water.

The EPA staff believes that the reasons cited by the requestors do not warrant an extension of 120-days on the public comment period. The reasons cited in the letter by the requestors to justify the extension are outside the scope of interest for comments as requested by EPA.

EPA staff believes that the 45 day comment period is adequate to provide ample opportunity to members of the public to develop their input and recommendations on the drinking water proposal.

Sincerely,

Sam Hernandez – Team Leader
Drinking Water PAGs
Office of Water

To: Christ, Lisa[Christ.Lisa@epa.gov]; Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]; Ellis, Jerry[Ellis.Jerry@epa.gov]
From: Burneson, Eric
Sent: Fri 7/1/2016 12:39:25 PM
Subject: FW: Proposed drinking water Protective Action Guides

FYI
-----Original Message-----
From: Greg Wingard [mailto:gwingard@earthlink.net]
Sent: Thursday, June 30, 2016 9:54 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Subject: Proposed drinking water Protective Action Guides

Mr. Burneson:

Thanks for your letter of June 20th on the above captioned matter.

You seem to be under some misconceptions. I am aware that the PAG's subject to this proposed guidelines are not meant to replace drinking water standards, but rather provide guidance related to "emergency"
situations. I am also aware that there are any number of assumptions built into the drinking water standards, such as a life cycle approach based on an assumption of a 70 year life-span. My rejoinder is if you are increasing the level of radioactive isotopes in drinking water during emergencies of "up to a year" in some cases by thousands of times over the existing drinking water standards, what fraction of a year does it take at that exposure level before you have exceeded your 70 year dose?

Also accidents are chaotic events by definition, and likely when dealing with radioactive contaminants, will result in scenarios not considered in setting the 70 year based standards. Case in point is the Fukushima accident in Japan. Numerous assumptions were made about dose and behavior of some of the released isotopes, such as cesium. Turns out those assumptions were not correct. Due to the nature of the accident, including the extreme heat the form of much of the cesium is in the form of extremely small glass spheres. So the assumption was that it would dissolve in water and rapidly wash away. Turns out glass spheres are not water soluble. Likewise assumptions about uptake and duration of exposure in humans were based on the same assumptions about solubility.
Turns out that micro glass spheres containing cesium behave in entirely different ways in the body than when it is in the expected form. While not much is currently known about this we do know, for example, that very small insoluble particles inhaled into the lung tend to lodge there and are not easily removed. The result is that assumptions being applied to dose rates in Japan are likely completely wrong, and the types of end points for morbidity and mortality are likely very much in error as well.

So if you have an "emergency" and 20 people are exposed to a thousand times the permissible standard for a short duration that might not be that big of a deal. If a hundred million people are exposed at just twice the standard that is very much a different situation.

The emergency guidance seems to be yet one more in a never ending set of give aways to the nuclear industry to decrease their responsibility, privatize the profits and make public the risks. While at times in emergency situations there are hard calls to be made, just waving a magic wand to allow abysmally high doses of radiation through drinking water to the public under this rationale simply isn't rational. Under the precautionary principle you (the EPA) should be taking the position that in the event of a radiation accident that spreads radiation into the water supply a first step is to supply alternate sources of drinking water that are not contaminated. Instead, deciding on how long EPA can get away with dosing them at high level for just seems to be the antithesis of what the agency mission is.

Same problem with proposals that have come up repeatedly to allow "low level" radioactive waste to be put into the recycled metals market.

What could possibly go wrong?

I remember having a discussion with my local region of EPA over the decision to stop monitoring for radiation from Fukushima (EPA had taken the lead in setting up the west coast monitoring system after the event). My position was that even though it would take the contaminant load in the water a while to get here, it was vital to set up a baseline of monitoring data for water and sediment to accurately assess any changed condition due to the accident in Japan. I was told there was no need for that as it would take a long time for the contamination to get here, if it even did, and that the Pacific Ocean is such a large volume of water that it would be absolutely impossible to determine any increase over the existing background. Well here we are, and EPA ended up being completely wrong on this. The air releases we were hit with in my area (Seattle) were about 400,000 times the "background" in the days after the accident. A private research effort has been doing water monitoring off our coast and the radiation levels attributed to Fukushima have last I looked doubled to tripled the "background".

Then the agency wonders why the public doesn't trust them when they come up with "emergency" guidelines that say, yeah we know that these are the drinking water standards, but we have an emergency so you are just going to have to suck it up for a year.

Regards,

Greg

To: DeCair, Sara[DeCair.Sara@epa.gov]; Christ, Lisa[Christ.Lisa@epa.gov]
From: Lee, Raymond
Sent: Thur 6/30/2016 7:39:39 PM
Subject: Re: NCRP cite request on EPA-HQ-OAR-2007-0268

Hi Sara, Lisa...

I uploaded the document yesterday into FMDS and sent a rush request to the docket staff yesterday, but as of right now it is still not publicly posted. They said they would let me know as soon as it's posted but I'm assuming they either have a boatload of other docs that have priority or their QA/QC/processing is taking longer than usual.

I'm out of the office today, but will keep monitoring my e-mail and let you know as soon as they give me the green light.

Thanks,

Ray

From: Lee, Ray
Sent: Thursday, June 30, 2016 9:47:17 AM
To: Lee, Raymond
Subject: FW: NCRP cite request on EPA-HQ-OAR-2007-0268

From: Christ, Lisa
Sent: Thursday, June 30, 2016 9:32 AM
To: Lee, Ray <Lee.Ray@epa.gov>
Cc: DeCair, Sara <DeCair.Sara@epa.gov>
Subject: FW: NCRP cite request on EPA-HQ-OAR-2007-0268

Hi Ray,

Just wondering if you were able to upload the excerpt into the docket?

Thank you –

Lisa

From: DeCair, Sara
Sent: Tuesday, June 28, 2016 5:55 PM
To: Christ, Lisa <Christ.Lisa@epa.gov>
Cc: Veal, Lee <Veal.Lee@epa.gov>; Nesky, Anthony <Nesky.Tony@epa.gov>
Subject: Re: NCRP cite request on EPA-HQ-OAR-2007-0268

Lisa, good news! We have permission to post an excerpt from the NCRP Report No. 174. I have the pages selected and in the morning will have a properly footer-marked permission-granted version ready for our own Ray Lee to add to the docket so the requestor and others can refer to it.

From: Christ, Lisa
Sent: Monday, June 27, 2016 8:57 AM
To: DeCair, Sara <DeCair.Sara@epa.gov>
Subject: FW: EPA DW pags EPA-HQ-OAR-2007-0268

Hi Sara,

Sam is out this week…wondering if you have access to NCRP Report 174? If so, I can place it in the docket, unless you already have it as a supporting document for the overall PAG Manual. Please let me know.

Thanks-

Lisa

From: Cindy Folkers [mailto:cindy@beyondnuclear.org]
Sent: Monday, June 27, 2016 8:37 AM
To: Christ, Lisa <Christ.Lisa@epa.gov>
Subject: EPA DW pags EPA-HQ-OAR-2007-0268

Hello, Lisa,

The pag mentions deriving its limit for pregnancy using this document: NCRP report 174 (p 7 in pag doc)

Is there non-cost public access to this document? I would expect so since NCRP is a congressionally chartered research body and EPA is basing recommendations on this document which is arcane and expensive to acquire.

Please advise me where I can access this document. Since it is over 300 pages, the sooner the better since the public has only a month left for comment.

Thank you,

Cindy Folkers

Radiation and Health Hazard Specialist

Beyond Nuclear

--

Cindy Folkers
Radiation & Health Specialist
Beyond Nuclear
6930 Carroll Ave #400
Takoma Park, MD 20912
301-270-2209

To: Christ, Lisa[Christ.Lisa@epa.gov]
From: Nesky, Anthony
Sent: Tue 6/28/2016 8:15:47 PM
Subject: Region 7 will be directing a call to you about the DW PAGs

Dear Lisa:

Region 7 will be directing a call to you from a member of the public about the drinking water PAG. This individual has expressed concern about the Westlake Landfill, and her concern about the drinking water PAG may be related to it.

Tony Nesky

Center for Radiation Information and Outreach

Tel: 202-343-9597

nesky.tony@epa.gov

To: Christ, Lisa[Christ.Lisa@epa.gov]
From: Cindy Folkers
Sent: Mon 6/27/2016 12:37:10 PM
Subject: EPA DW pags EPA-HQ-OAR-2007-0268

Hello, Lisa,
The pag mentions deriving its limit for pregnancy using this document: NCRP report 174 (p 7 in pag doc)

Is there non-cost public access to this document? I would expect so since NCRP is a congressionally chartered research body and EPA is basing recommendations on this document which is arcane and expensive to acquire.

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Thank you,

Cindy Folkers
Radiation and Health Hazard Specialist
Beyond Nuclear

--
Cindy Folkers
Radiation & Health Specialist
Beyond Nuclear
6930 Carroll Ave #400
Takoma Park, MD 20912
301-270-2209

To: DeCair, Sara[DeCair.Sara@epa.gov]
Cc: Christ, Lisa[Christ.Lisa@epa.gov]; Veal, Lee[Veal.Lee@epa.gov]
From: D.Gilley@iaea.org
Sent: Fri 6/24/2016 3:11:35 PM
Subject: Re: New drinking water Protective Action Guide proposal
removed.txt
image002.jpg
image003.jpg
image004.jpg
image005.jpg
image006.jpg
image007.png

Thank you

Sent from my iPhone

On 24 Jun 2016, at 16:59, "DeCair.Sara@epa.gov<mailto:DeCair.Sara@epa.gov>" <DeCair.Sara@epa.gov<mailto:DeCair.Sara@epa.gov>> wrote:

Dear Debbie,

We've published the drinking water PAG proposal for public review and comment. Our official docket where you can get the proposal and notice requesting comment are on this page: https://www.regulations.gov/docket?D=EPA-HQ-OAR-2007-0268

The comments are due on July 25. Thanks for your interest in this work!

Sara DeCair
202-343-9108

From: D.Gilley@iaea.org<mailto:D.Gilley@iaea.org> [mailto:D.Gilley@iaea.org]
Sent: Thursday, March 03, 2016 8:32 AM
To: Christ, Lisa <Christ.Lisa@epa.gov<mailto:Christ.Lisa@epa.gov>>; DeCair, Sara <DeCair.Sara@epa.gov<mailto:DeCair.Sara@epa.gov>>
Cc: Veal, Lee <Veal.Lee@epa.gov<mailto:Veal.Lee@epa.gov>>
Subject: RE: New drinking water standards

Thank you Lisa,
My misunderstanding. I simply referred to wrong topic (it was a busy week, notes all blur together) . I would like a copy of the new pags for drinking water supplies when it is publically available.
Have a wonderful day
Debbie

Debbie Gilley
Radiation Protection Specialist | Radiation Protection of Patients Unit |
Radiation Safety and Monitoring Section |
Division of Radiation, Transport and Waste Safety | Department of Nuclear Safety and Security |
International Atomic Energy Agency | Vienna International Centre, PO Box 100, 1400 Vienna, Austria |
Email: D.Gilley@IAEA.org|<mailto:D.Gilley@IAEA.org|> T: (+43-1) 2600-25716
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<image005.jpg><http://www.flickr.com/photos/iaea_imagebank/>
<image006.jpg><http://www.linkedin.com/company/iaea>
<image007.png><https://rpop.iaea.org/RPoP/RPoP/Content/index.htm>

From: Christ.Lisa@epa.gov<mailto:Christ.Lisa@epa.gov> [mailto:Christ.Lisa@epa.gov]
Sent: Thursday, 03 March 2016 14:27
To: GILLEY, Debbie; DeCair, Sara
Cc: Veal, Lee
Subject: RE: New drinking water standards

Hi Debbie –
The EPA is not proposing new drinking water standards. We are preparing guidance for protective actions when radiological event impacts drinking water supplies. This is guidance only and does not substitute for regulation. I hope this helps to clarify.
Lisa

From: D.Gilley@iaea.org<mailto:D.Gilley@iaea.org> [mailto:D.Gilley@iaea.org]
Sent: Thursday, March 03, 2016 2:03 AM
To: DeCair, Sara <DeCair.Sara@epa.gov<mailto:DeCair.Sara@epa.gov>>; Christ, Lisa <Christ.Lisa@epa.gov<mailto:Christ.Lisa@epa.gov>>
Cc: Veal, Lee <Veal.Lee@epa.gov<mailto:Veal.Lee@epa.gov>>
Subject: RE: New drinking water standards

Thank you Sara!
Dear Lisa,
Miroslav Pinak and I are interested in the new drinking water standards proposed by the EPA. I believe they have been developed and in the process of being released (maybe later this year). Would it be possible to send those to me when they are published? The IAEA may use these as reference material in upcoming publications.
Enjoyed your presentation!
Debbie

Debbie Gilley
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Radiation Safety and Monitoring Section |
Division of Radiation, Transport and Waste Safety | Department of Nuclear Safety and Security |
International Atomic Energy Agency | Vienna International Centre, PO Box 100, 1400 Vienna, Austria |
Email: D.Gilley@IAEA.org|<mailto:D.Gilley@IAEA.org|> T: (+43-1) 2600-25716
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<image006.jpg><http://www.linkedin.com/company/iaea>
<image007.png><https://rpop.iaea.org/RPoP/RPoP/Content/index.htm>

From: DeCair.Sara@epa.gov<mailto:DeCair.Sara@epa.gov> [mailto:DeCair.Sara@epa.gov]
Sent: Wednesday, 02 March 2016 23:29
To: GILLEY, Debbie; Christ, Lisa
Cc: Veal, Lee
Subject: Re: New drinking water standards

Sure enough, Lisa Christ is copied on this reply. Have a great evening,
Sara

Sent from my iPhone

On Mar 1, 2016, at 7:50 AM, "D.Gilley@iaea.org<mailto:D.Gilley@iaea.org>" <D.Gilley@iaea.org<mailto:D.Gilley@iaea.org>> wrote:

<image001.gif>
Hi Sara,
I am trying to find the EPA staff member who provided the update on the proposed drinking water standards at the recent ISCORS meeting. IAEA is interested in staying up-to-date on the status of the standards and receiving a copy when they are publically available. I believe the contact is Lisa Crist, but I am old and my memory is bad. Can you help?
Thanks
Debbie

Debbie Gilley
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International Atomic Energy Agency | Vienna International Centre, PO Box 100, 1400 Vienna, Austria |
Email: D.Gilley@IAEA.org<mailto:D.Gilley@IAEA.org>| T: (+43-1) 2600-25716
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Cc: Veal, Lee[Veal.Lee@epa.gov]
From: DeCair, Sara
Sent: Fri 6/24/2016 2:59:38 PM
Subject: RE: New drinking water Protective Action Guide proposal

Dear Debbie,

We've published the drinking water PAG proposal for public review and comment. Our official docket where you can get the proposal and notice requesting comment are on this page: https://www.regulations.gov/docket?D=EPA-HQ-OAR-2007-0268

The comments are due on July 25. Thanks for your interest in this work!

Sara DeCair

202-343-9108

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Debbie Gilley

Radiation Protection Specialist | Radiation Protection of Patients Unit |

Radiation Safety and Monitoring Section |

Division of Radiation, Transport and Waste Safety | Department of Nuclear Safety and Security |

International Atomic Energy Agency | Vienna International Centre, PO Box 100, 1400 Vienna, Austria |

Email: **D.Gilley@IAEA.org|** T: (+43-1) 2600-25716

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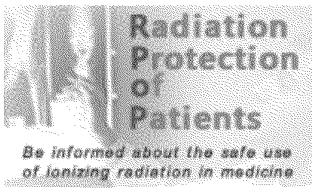

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Debbie Gilley

Radiation Protection Specialist | Radiation Protection of Patients Unit |

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Division of Radiation, Transport and Waste Safety | Department of Nuclear Safety and Security |

International Atomic Energy Agency | Vienna International Centre, PO Box 100, 1400 Vienna, Austria |

Email: **D.Gilley@IAEA.org|** T: (+43-1) 2600-25716

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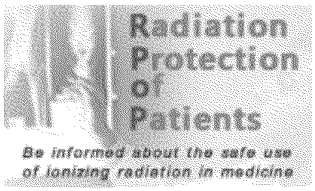

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<image001.gif>

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Thanks

Debbie

Debbie Gilley

Radiation Protection Specialist | Radiation Protection of Patients Unit |

Radiation Safety and Monitoring Section |

Division of Radiation, Transport and Waste Safety | Department of Nuclear Safety and Security |

International Atomic Energy Agency | Vienna International Centre, PO Box 100, 1400 Vienna, Austria |

Email: **D.Gilley@IAEA.org**| T: (+43-1) 2600-25716

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To: Christ, Lisa[Christ.Lisa@epa.gov]; Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]; Ellis, Jerry[Ellis.Jerry@epa.gov]; Snead, Kathryn[Snead.Kathryn@epa.gov]; Veal, Lee[Veal.Lee@epa.gov]
From: DeCair, Sara
Sent: Tue 6/21/2016 7:49:36 PM
Subject: NRC rad in waterways report pre-brief
NRC aqueous pathway report brief.pdf

This afternoon Trish Milligan of the US Nuclear Regulatory Commission briefed me and colleagues from the source water protection part of OW (I didn't get names down, but noted all the names the invitation was fwded to, in the attached handwritten notes).

I took more notes than you will want, but just FYI if you are interested. NRC will be briefing this at the June 28 Federal Radiological Preparedness Coordinating Committee meeting which Lee and Kathryn are planning to attend. They'll note anything we'll want to know in preparation for the planned fall publication of their severe accident study via waterways.

Bottom line: Assuming no mitigation at the plant and no protective actions taken, doses along lakes and rivers modeled could be significant, but the Executive Summary will include discussion of how much dose reduction would be afforded by protective actions including restriction on uses of the water/fishing.

NRC will share interagency talking points prior to the publication in case those of us working on PAGs and in particular, drinking water PAGs, would get any inquiries.

Sara D. DeCair

http://www.epa.gov/radiation/rert/pags.html

202-343-9108

Room 1416 B in WJC West

To: Flaharty, Stephanie[Flaharty.Stephanie@epa.gov]; Christ, Lisa[Christ.Lisa@epa.gov]; Oshida, Phil[Oshida.Phil@epa.gov]
From: Schuck, Tracey
Sent: Tue 6/21/2016 12:04:04 PM
Subject: RE: Reminder - RE: CMS New Assignment - Wingard - PAGs - AX-16-000-8988 Due June 22nd.

Steph, I'll forward you the file. thanks

-----Original Message-----
From: Flaharty, Stephanie
Sent: Tuesday, June 21, 2016 8:00 AM
To: Christ, Lisa <Christ.Lisa@epa.gov>; Oshida, Phil <Oshida.Phil@epa.gov>
Cc: Schuck, Tracey <Schuck.Tracey@epa.gov>
Subject: RE: Reminder - RE: CMS New Assignment - Wingard - PAGs - AX-16-000-8988 Due June 22nd.

Yes, I received the signed letter but I could use the Word file to support future responses, thanks!

-----Original Message-----
From: Christ, Lisa
Sent: Tuesday, June 21, 2016 7:45 AM
To: Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>; Oshida, Phil <Oshida.Phil@epa.gov>
Cc: Schuck, Tracey <Schuck.Tracey@epa.gov>
Subject: RE: Reminder - RE: CMS New Assignment - Wingard - PAGs - AX-16-000-8988 Due June 22nd.

Phil said he routed it to you yesterday?

-----Original Message-----
From: Flaharty, Stephanie
Sent: Tuesday, June 21, 2016 7:06 AM
To: Christ, Lisa <Christ.Lisa@epa.gov>
Cc: Schuck, Tracey <Schuck.Tracey@epa.gov>
Subject: RE: Reminder - RE: CMS New Assignment - Wingard - PAGs - AX-16-000-8988 Due June 22nd.

Good morning Lisa / Tracey -- can I get the Word file for this response, thanks ! Steph

-----Original Message-----
From: Christ, Lisa
Sent: Monday, June 20, 2016 12:45 PM
To: Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>
Subject: RE: Reminder - RE: CMS New Assignment - Wingard - PAGs - AX-16-000-8988 Due June 22nd.

It's with Phil now for signature.
:)

-----Original Message-----
From: Flaharty, Stephanie
Sent: Monday, June 20, 2016 12:18 PM
To: Christ, Lisa <Christ.Lisa@epa.gov>
Subject: Reminder - RE: CMS New Assignment - Wingard - PAGs - AX-16-000-8988 Due June 22nd.

Hi Lisa,

Here's a tickler for the subject control. Phil or you can sign for Eric. Due Weds. 6/22.

Thanks,

Steph

-----Original Message-----
From: Flaharty, Stephanie
Sent: Thursday, June 09, 2016 2:56 PM
To: Christ, Lisa <Christ.Lisa@epa.gov>
Cc: Burneson, Eric <burneson.eric@epa.gov>; Phil Oshida <Oshida.Phil@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>; Greene, Ashley <Greene.Ashley@epa.gov>
Subject: CMS New Assignment - Wingard - PAGs - AX-16-000-8988 Due June 22nd.

Hi Lisa,

Here's our first incoming on PAGs. This is a direct reply, so Peter or Eric can sign. Due June 22nd.

Summary Information -
Control Number: AX-16-000-8988-WH
Control Subject: Revised Protection Action Guides That Would Increase Exposure From Radiation in Drinking Water
From: Wingard, Greg J.

Thanks,
Steph

To: Christ, Lisa[Christ.Lisa@epa.gov]
From: Harris, Adrienne
Sent: Tue 6/21/2016 12:02:50 PM
Subject: FW: House science hearing 1 pager on Radiation in drinking water
Rads in drinking water 1-pager_ogwdw.docx

Thanks for your help!

Adrienne O. Harris
Acting Special Assistant

Office of Ground Water and Drinking Water
(202) 250-8793 (office)

From: Grevatt, Peter
Sent: Monday, June 20, 2016 7:54 PM
To: Peck, Gregory <Peck.Gregory@epa.gov>
Cc: Orvin, Chris <Orvin.Chris@epa.gov>; Brown, Tristan <Brown.Tristan@epa.gov>; Greene, Ashley <Greene.Ashley@epa.gov>; Beauvais, Joel <Beauvais.Joel@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>; Harris, Adrienne <Harris.Adrienne@epa.gov>; Osegueda, Carlos <Osegueda.Carlos@epa.gov>; Campbell, Ann <Campbell.Ann@epa.gov>
Subject: Re: House science hearing 1 pager on Radiation in drinking water

Please see attached one-pager on radiation in DW. I have also included a bit of additional background on the draft DW PAG document and the internal Q/As we developed in conjunction with the release of that document as additional background. Please let me know if you need more on this.

Thanks, P. Grevatt

From: Grevatt, Peter
Sent: Monday, June 20, 2016 7:23:23 PM
To: Peck, Gregory
Cc: Orvin, Chris; Brown, Tristan
Subject: Re: House science hearing 1 pager on Radiation in drinking water

Will have to you shortly. Have to make a few minor changes to the draft and will send your way ASAP.

Sent from my iPhone

On Jun 20, 2016, at 4:34 PM, Peck, Gregory <Peck.Gregory@epa.gov> wrote:

Hey Peter. The administrators folks are frustrated they don't have this and the hearing is tomorrow. Can you find out where things stand. Chris has been working with your folks.

Thanks

Gregory E. Peck

Chief of Staff

Office of Water

U.S.Environmental Protection Agency

Washington, DC 20460

(202)564-5700

Begin forwarded message:

From: "Orvin, Chris" <Orvin.Chris@epa.gov>
Date: June 20, 2016 at 4:59:46 PM EDT
To: "Greene, Ashley" <Greene.Ashley@epa.gov>, "Harris, Adrienne" <Harris.Adrienne@epa.gov>, "Conerly, Octavia" <Conerly.Octavia@epa.gov>
Cc: "Peck, Gregory" <Peck.Gregory@epa.gov>
Subject: RE: House science hearing 1 pager on Radiation in drinking water

Hey folks – we really need something (even a draft) this afternoon. How are we coming?

Chris Orvin
U.S Environmental Protection Agency

Special Assistant to the Chief of Staff (detail)
Office of Water

202-564-0430

From: Orvin, Chris
Sent: Monday, June 20, 2016 9:37 AM
To: Greene, Ashley <Greene.Ashley@epa.gov>; Harris, Adrienne <harris.adrienne@epa.gov>; Conerly, Octavia <Conerly.Octavia@epa.gov>
Cc: Peck, Gregory <Peck.Gregory@epa.gov>; Orvin, Chris <Orvin.Chris@epa.gov>
Subject: FW: House science hearing 1 pager on Radiation in drinking water
Importance: High

Ashley, Adrienne and Octavia –

Can you please get me and Greg a one-pager for the Administrator on radiation in drinking water ASAP?

We are looking for top-line messages in talking points. Background info is OK too.

Thanks,

Chris Orvin
U.S Environmental Protection Agency

Special Assistant to the Chief of Staff (detail)
Office of Water

202-564-0430

From: Kaiser, Sven-Erik
Sent: Monday, June 20, 2016 9:31 AM

To: Klasen, Matthew <Klasen.Matthew@epa.gov>; Orvin, Chris <Orvin.Chris@epa.gov>; Peck, Gregory <Peck.Gregory@epa.gov>; Grevatt, Peter <Grevatt.Peter@epa.gov>; Davis, CatherineM <Davis.CatherineM@epa.gov>
Subject: House science hearing 1 pager on Radiation in drinking water

Heads up that we need a one pager on radiation in drinking water as soon as possible. It's for the administrators house science hearing this Weds, June 22. Please let me know if any questions. Thanks,

Sven

From: "Brown, Tristan" <Brown.Tristan@epa.gov>
Date: June 20, 2016 at 9:07:23 AM EDT
To: "Kaiser, Sven-Erik" <Kaiser.Sven-Erik@epa.gov>
Subject: Radiation in drinking water

Hey Sven,

Can you get a one-pager together—with top line notes—about radiation in drinking water?

Thank you!

Tristan Brown

Deputy Associate Administrator for

Congressional Affairs

U.S. Environmental Protection Agency

Office: (202) 564-4113

Email: brown.tristan@epa.gov

To: Christ, Lisa[Christ.Lisa@epa.gov]
From: Osegueda, Carlos
Sent: Tue 6/21/2016 2:44:04 AM
Subject: Fwd: House science hearing 1 pager on Radiation in drinking water
Rads in drinking water 1-pager_ogwdw.docx
ATT00001.htm

Thank you

Sent from my iPhone

Begin forwarded message:

From: "Grevatt, Peter" <Grevatt.Peter@epa.gov>
Date: June 20, 2016 at 7:54:26 PM EDT
To: "Peck, Gregory" <Peck.Gregory@epa.gov>
Cc: "Orvin, Chris" <Orvin.Chris@epa.gov>, "Brown, Tristan" <Brown.Tristan@epa.gov>, "Greene, Ashley" <Greene.Ashley@epa.gov>, "Beauvais, Joel" <Beauvais.Joel@epa.gov>, "Burneson, Eric" <Burneson.Eric@epa.gov>, "Harris, Adrienne" <Harris.Adrienne@epa.gov>, "Osegueda, Carlos" <Osegueda.Carlos@epa.gov>, "Campbell, Ann" <Campbell.Ann@epa.gov>
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Chief of Staff
Office of Water
U.S.Environmental Protection Agency
Washington, DC 20460

(202)564-5700

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To: "Greene, Ashley" <Greene.Ashley@epa.gov>, "Harris, Adrienne" <Harris.Adrienne@epa.gov>, "Conerly, Octavia" <Conerly.Octavia@epa.gov>
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Subject: RE: House science hearing 1 pager on Radiation in drinking water

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Chris Orvin
U.S Environmental Protection Agency

Special Assistant to the Chief of Staff (detail)
Office of Water

202-564-0430

From: Orvin, Chris
Sent: Monday, June 20, 2016 9:37 AM
To: Greene, Ashley <Greene.Ashley@epa.gov>; Harris, Adrienne <harris.adrienne@epa.gov>; Conerly, Octavia <Conerly.Octavia@epa.gov>
Cc: Peck, Gregory <Peck.Gregory@epa.gov>; Orvin, Chris

<Orvin.Chris@epa.gov>
Subject: FW: House science hearing 1 pager on Radiation in drinking water
Importance: High

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We are looking for top-line messages in talking points. Background info is OK too.

Thanks,

Chris Orvin
U.S Environmental Protection Agency

Special Assistant to the Chief of Staff (detail)
Office of Water

202-564-0430

From: Kaiser, Sven-Erik
Sent: Monday, June 20, 2016 9:31 AM
To: Klasen, Matthew <Klasen.Matthew@epa.gov>; Orvin, Chris <Orvin.Chris@epa.gov>; Peck, Gregory <Peck.Gregory@epa.gov>; Grevatt, Peter <Grevatt.Peter@epa.gov>; Davis, CatherineM <Davis.CatherineM@epa.gov>
Subject: House science hearing 1 pager on Radiation in drinking water

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Please let me know if any questions. Thanks,

Sven

From: "Brown, Tristan" <Brown.Tristan@epa.gov>
Date: June 20, 2016 at 9:07:23 AM EDT
To: "Kaiser, Sven-Erik" <Kaiser.Sven-Erik@epa.gov>
Subject: Radiation in drinking water

Hey Sven,

Can you get a one-pager together—with top line notes—about radiation in drinking water?

Thank you!

Tristan Brown

Deputy Associate Administrator for

Congressional Affairs

U.S. Environmental Protection Agency

Office: (202) 564-4113

Email: brown.tristan@epa.gov

To: Christ, Lisa[Christ.Lisa@epa.gov]
Cc: Grevatt, Peter[Grevatt.Peter@epa.gov]
From: Burneson, Eric
Sent: Mon 6/20/2016 4:28:10 PM
Subject: Fwd: PAG Manual

Can you get an update to Peter and I

Sent from my iPhone

Begin forwarded message:

From: "Beauvais, Joel" <Beauvais.Joel@epa.gov>
Date: June 20, 2016 at 10:55:02 AM CDT
To: "Grevatt, Peter" <Grevatt.Peter@epa.gov>
Cc: "Burneson, Eric" <Burneson.Eric@epa.gov>
Subject: RE: PAG Manual

This is going to come up in a meeting with the Administrator tomorrow. Can you let me know if there are any updates, including on OAR's planned schedule? Thanks.

From: Beauvais, Joel
Sent: Monday, May 23, 2016 12:01 PM
To: Grevatt, Peter <Grevatt.Peter@epa.gov>
Cc: Burneson, Eric <Burneson.Eric@epa.gov>
Subject: Re: PAG Manual

Well that is less than a week and a half away so it may not make a difference. I just need to know how it fits into the overall schedule.

On May 23, 2016, at 11:26 AM, Grevatt, Peter <Grevatt.Peter@epa.gov> wrote:

Will do. I was thinking it would be good to avoid putting her in the room with NGOs that had expressed concern with the PAGs on June 2, but if that's not a concern we can press.

Sent from my iPhone

On May 23, 2016, at 9:10 AM, Beauvais, Joel <Beauvais.Joel@epa.gov> wrote:

OK, let's revisit this soon. Given the Administrator's interest, I would like to streamline this as possible. We can get help from her and OP on OIRA process, but we need to look at opportunities to speed things internally as well – including proposal signature timing (?), speeding internal process with OLEM, etc. Is the below the best we can do, meaning we would be asking for a 60-75 day review at OMB to get this out, or can we shave any more internally? I will need to go back to Gina and Janet on this.

From: Burneson, Eric
Sent: Monday, May 23, 2016 10:49 AM
To: Beauvais, Joel <Beauvais.Joel@epa.gov>; Grevatt, Peter <Grevatt.Peter@epa.gov>
Subject: RE: PAG Manual

Joel:

We are getting the signature package for the draft drinking water PAG up to your office this week, and the coms materials were shared with Travis last week.

•□□□□□□□□ We hope to publish for comment in early june.

•□□□□□□□□ There is a 45 day comment period that will end in mid July

•□□□□□□□□ We had planned 1month for the evaluation of comments and revisions to the PAG by mid August (note that this could be optimistic given likely significant opposition from environmental community)

•□□□□□□□□ Followed by 1 month internal review process (again also an optimistic timeframe given significant previous intra agency concern (OLEM) with the proposal) by mid September

•□□□□□□□□ We would submit the final to OMB by the end of September.

•□□□□□□□□ Our ability to meet these timeframes and the duration of OMB review will determine whether we

o incorporate the Drinking Water Chapter into the final PAG manual (which just began OMB review) or

o publish a separate final DW PAG chapter at a later date from the rest of the manual.

I spoke to colleagues in OAR and their hope is that we can still publish one final PAG document that includes the DW PAG, however they are going to wait and see how much progress we have made once their document has cleared OMB and they are ready for publication. I should be getting a copy of their latest schedule later today.

Eric

From: Beauvais, Joel
Sent: Monday, May 23, 2016 8:47 AM
To: Grevatt, Peter <Grevatt.Peter@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>
Subject: FW: PAG Manual

Thoughts? It would be helpful for me to understand our expected timing for milestones for getting this done.

From: McCabe, Janet
Sent: Monday, May 23, 2016 8:36 AM
To: Adm13McCarthy, Gina <Adm13McCarthy.Gina@epa.gov>; Beauvais, Joel <Beauvais.Joel@epa.gov>
Subject: RE: PAG Manual

I am somewhat frustrated as well. OIRA just uploaded the rest of the Manual final (everything but the DW piece), which despite my nagging they wouldn't do until they'd cleared the DW proposal, which happened last week as reported below. I am pretty confident that the "rest" will get finalized this year, but as I'm sure you remember, the DW piece is where a lot of the action is.

From: Adm13McCarthy, Gina
Sent: Monday, May 23, 2016 8:27 AM
To: McCabe, Janet <McCabe.Janet@epa.gov>; Beauvais, Joel

<Beauvais.Joel@epa.gov>
Subject: PAG Manual

I just wanted to ask both of you to do what you can to get the final manual done this year. If I need to intervene on any reviews etc, please let me know. I consider this manual to be a really important product that states need and we have an obligation to provide. So let's see how we gear up to drive this home. The interagency process has gone on long enough and we cannot let the next step follow in the same path. .

Drinking Water Protective Action Guidelines: This week OMB cleared our proposed Drinking Water Protective Action Guideline (PAG). We anticipate the draft PAG will be ready for release within the next couple weeks. The proposed PAG does not affect EPA's drinking water standards for radionuclides. It consists of a two-tier drinking water PAG that would be used during the intermediate phase following a radiation incident: 500 millirem (mrem) (5 milliSievert (mSv)) projected dose for the general population (defined as anyone over age 15, excluding pregnant women and nursing women), and 100 mrem (1 mSv) projected dose for pregnant women, nursing women and children age 15 and under. We anticipate a lot of attention on this action from environmental groups, and will be coordinating with OPA on the rollout. Once public comments have been addressed, the DW PAG will be folded into the broader PAG Manual that OAR has been developing.

To: Christ, Lisa[Christ.Lisa@epa.gov]
From: Harris, Adrienne
Sent: Mon 6/20/2016 4:25:42 PM
Subject: FW: House science hearing 1 pager on Radiation in drinking water
Rads in drinking water 1-pager.docx
ROLL OUT PAGS 6 3 16.docx

Hi Lisa,

As I mentioned earlier, there is a request for a 1-pager on Radiation in drinking water. Attached is a draft 1-pager adopted largely from the comms roll-out materials (attached). I also added some of the reg language on the MCLs.

Please edit the 1-pager for what messages you think are key. I kept some of the Q&A that could be an addendum to the 1-pager. Ashley will coordinate Peter and/or Eric's review of the 1-pager in Denver before we send it up.

Thanks!

Adrienne O. Harris
Acting Special Assistant

Office of Ground Water and Drinking Water
(202) 250-8793 (office)

From: Klasen, Matthew
Sent: Monday, June 20, 2016 9:43 AM
To: Orvin, Chris <Orvin.Chris@epa.gov>; Kaiser, Sven-Erik <Kaiser.Sven-Erik@epa.gov>; Peck, Gregory <Peck.Gregory@epa.gov>; Grevatt, Peter <Grevatt.Peter@epa.gov>; Davis, CatherineM <Davis.CatherineM@epa.gov>
Subject: Re: House science hearing 1 pager on Radiation in drinking water

...and, for what it's worth, I suspect this is arising from the recently released PAG for drinking water -- so hopefully we could just pull from the website or associated language there.

https://www.epa.gov/radiation/protective-action-guides-pags

-Matt

Matt Klasen
U.S Environmental Protection Agency
Office of Congressional Affairs
WJC North 3443N
202-566-0780
cell (202) 505-0787

From: Orvin, Chris
Sent: Monday, June 20, 2016 9:40 AM
To: Kaiser, Sven-Erik; Klasen, Matthew; Peck, Gregory; Grevatt, Peter; Davis, CatherineM
Subject: RE: House science hearing 1 pager on Radiation in drinking water

Thanks, Sven. We're working on it.

Chris Orvin
U.S Environmental Protection Agency

Special Assistant to the Chief of Staff (detail)
Office of Water

202-564-0430

From: Kaiser, Sven-Erik
Sent: Monday, June 20, 2016 9:31 AM
To: Klasen, Matthew <Klasen.Matthew@epa.gov>; Orvin, Chris <Orvin.Chris@epa.gov>; Peck, Gregory <Peck.Gregory@epa.gov>; Grevatt, Peter <Grevatt.Peter@epa.gov>; Davis, CatherineM <Davis.CatherineM@epa.gov>
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Hey Sven,

Can you get a one-pager together—with top line notes—about radiation in drinking water?

Thank you!

Tristan Brown

Deputy Associate Administrator for

Congressional Affairs

U.S. Environmental Protection Agency

Office: (202) 564-4113

Email: brown.tristan@epa.gov

RADIATION IN DRINKING WATER

Background:

- Radionuclides generally enter drinking water through the erosion or chemical weathering of naturally occurring mineral deposits, although human activity (such as mining, industrial activities, or military activities that use or produce man-made radioactive materials) can also contribute to their presence in water.
- During a radiological emergency, radioactive material could be released into the rivers, lakes, and streams used by public water suppliers. During Fukushima nuclear power plant incident, the EPA recognized that a short-term emergency drinking water guide may be useful for public health protection.

EPA Actions:

- Regulatory:
    - The Environmental Protection Agency (EPA) regulates radionuclides in drinking water to protect public health. On December 7, 2000, EPA published the Radionuclides Final Rule.
    - EPA has limits in drinking water called maximum contaminant levels
    - (MCLs) for four groupings of radionuclides:

Regulated Radionuclide	**MCL**	**MCLG**
Beta/photon emitters*	4 mrem/yr	0
Gross alpha particle	15 pCi/L	0
Combined radium-226/228	5 pCi/L	0
Uranium	30 µg/L	0
*A total of 168 individual beta particle and photon emitters may be used to calculate compliance with the MCL.		

- Non-regulatory guidance:
    - The purpose of EPA's Protective Active Guide (PAG) for Radiological Incidents is to guide the first year of planning and decision-making efforts by local and state officials. It is not intended for long-term or everyday use. The proposed PAG does not affect EPA's drinking water standards for radionuclides. Therefore, affected public water systems are expected to take actions to return to compliance with drinking water standards after a radiological emergency as soon as practicable.

Additional information on the drinking water PAG:

- EPA is proposing a two-tiered drinking water PAG of 500 mrem projected dose in the

ED_001057_00005400

first year for the general population, and a stricter limit for people at more sensitive life stages -- 100 mrem projected dose in the first year for infants, children, pregnant women and nursing mothers. During the early Fukushima response, Japan used a very similar set of guides: about 100 mrem for infants on formula and about 400 mrem for everyone else. This helped Japanese officials prioritize the distribution of bottled water.

- The proposed drinking water PAG was developed in consideration of several key factors, including existing radiation protection standards, the drinking water MCLs for radionuclides, excess health risks associated with the radiation doses identified in the draft 2013 PAG Manual, and standards that have been set in response to previous radiological incidents. The proposed adult drinking water PAG of 500 mrem is consistent with both the FDA food PAG of 500 mrem and the 500 mrem one-year whole body dose guide for drinking water established by the Department of Homeland Security.

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INTERNAL QUESTIONS & ANSWERS

Why is there a need for a drinking water PAG when EPA already has regulations for radionuclides in drinking water?
Under the Safe Drinking Water Act (SDWA), the Agency established a dose-based Maximum Contaminant Level (MCL) for beta particle and photon (gamma) radioactivity of 4 mrem/yr; based on lifetime exposure criteria, which assume 70 years of continued exposure to contaminants in drinking water.

The Agency determined that it may not be possible to base response measures during short-term emergency incidents on lifetime exposure criteria. While the SDWA framework is appropriate for normal operations, it does not provide the necessary tools to assist emergency responders with determining the need for an immediate protective action (e.g., do not drink orders). The goal is to prioritize potentially scarce water resources for those most at risk in a disaster response.

Will the drinking water PAG weaken EPA's regulations for radionuclides in drinking water?
No. The drinking water PAG is non-regulatory guidance for emergencies only. Public water systems must comply with EPA's National Primary Drinking Water Regulations for Radionuclides. Water systems are expected to take corrective measures to meet radionuclide standards as soon as practicable.

Why is there a different guidance for pregnant women and children versus adults?
EPA proposes a lower dose threshold for sensitive ages because fetuses, infants, and children are at greater risk from radiological exposures than adults. This is due to two reasons. First, their cells in their growing bodies develop at such a rapid pace, making them more sensitive to the potential harmful effects of radiation. Second, they have more time to be affected by longer-lived radionuclides that clear slowly from the body; a newborn that ingests radioactive material in water might be subject to the effects of that radiation for a longer period of time than an adult.

FDA already mentions water in their Food PAG guidance. Why did EPA just propose a new drinking water guidance?
EPA's authorities are separate from FDA's. Whereas the FDA food PAG is relevant for food, EPA's drinking water PAG accounts for possible contamination in the drinking water supply.

A main difference between the FDA Food PAG and EPA's Drinking Water PAG is in the technical approach, in that the EPA PAG is based on newer definitions of dosimetry. There is no difference in protection because the underlying objective for both PAGs is to assure individuals will have no significant health risk from ingesting radioactive contamination.

The various PAGs are designed to work in concert, allowing emergency responders to choose the exposure reduction strategies that match the exposure scenario, community needs, and resources available in the particular emergency.

Since FDA and EPA each has a PAG of 500 mrem, is it possible for someone to get 500 mrem from food AND 500 mrem from water?
It is unlikely that someone would get 500 mrem from food and 500 mrem from drinking water. Two PAGs were established because FDA's and EPA's authorities are separate but the two Agencies work closely in radiological response and recovery planning. Therefore, the 500 mrem PAG is not anticipated to be reached whether via food, water, or both.

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How does the EPA drinking water PAG for adults and infants compare to the drinking water emergency standards for adults and infants established by the Japanese government?
The Japanese adult drinking water emergency standard of 300 Bq/L corresponds to a dose of about 1 mrem/day, or 365 mrem over the course of a year (on the same order of magnitude as EPA's proposed PAG for the adult population), assuming a high-end default water ingestion rate of 2 L/day. Using the Japanese infant drinking water emergency standard of 100 Bq/L, from birth until the age of 1, and an infant consumes an average of 0.2 L/day over the course of the year, the projected dose is 134 mrem in a year.

What about the total dose I might incur if this water PAG is established? Or, what happens from a cumulative risk perspective?
In developing the drinking water PAG, we did consider the potential for cumulative exposure. PAGs do not represent "acceptable" routine exposures in the way that environmental standards such as MCLs do. PAGs are guidance levels to support emergency decision making by response authorities to avoid unnecessary radiation exposure. Development and implementation of PAGs are always guided by three basic principles: Avoid acute effects, minimize cancer risk, and ensure the actions taken are not more dangerous than the risk being avoided. While the PAGs for various media/pathways are separate, emergency management officials must consider all exposure routes when making protective action decisions in an emergency.

Local decision makers will need to determine the appropriate PAGs depending on projected risk. For the PAGs, exposure routes are divided up by time and circumstance to allow the many different potential protective actions to be tailored to the specific risks that must be addressed. The full PAG Manual addresses all of the other pathways (plume inhalation, immersion, ground shine, skin and thyroid doses in particular, long term exposure to contamination, reentry and return to complete cleanup work, etc.) but always within parameters appropriate to a corresponding PAG.

What is a drinking water PAG?
The drinking water Protective Action Guide is a health-based value that can be used in the event of an emergency to determine when alternative drinking water should be provided and the use of contaminated water supplies be restricted. The drinking water PAG are doses of radiation that should be avoided during an emergency event. They do not represent acceptable routine exposures. PAGs trigger safety measures—in this case, provision of alternative drinking water -- to keep doses to the public as low as possible during emergency situations only.

How does the drinking water PAG work with EPA's existing Safe Drinking Water Act regulations?
The drinking water PAG is non-regulatory guidance for emergency situations only. Immediately following a radiological incident, community water systems must return to compliance with EPA's Radionuclides Rule[1]. Public water suppliers will be required to take corrective measures to meet radionuclide standards as soon as practicable.

At what point and what concentrations will I be told to stop drinking tap water during a radiological emergency?
State and local officials will make decisions about continued use of tap water based upon the conditions on site during a radiological emgergincy. The drinking water PAG provides information they will consider including two scientifically-based levels to be avoided (100 mrem for infants, children aged 15 and under, pregnant women

[1] For more information about EPA's regulations for radionuclides in drinking water, refer to the Radionuclides Rule: A Quick Reference Guide: http://water.epa.gov/lawsregs/rulesregs/sdwa/radionuclides/upload/2009_04_16_radionuclides_qrg_radionuclides.pdf

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and nursing women; 500 mrem for anyone over age 15 excluding pregnant women and nursing women) for periods up to one year. Since this is only guidance, the levels selected by your state or local officials will depend on the type and severity of the incident. You may not be instructed to stop drinking tap water. Your water department—in coordination with state/local officials and emergency managers—may choose to either use water from storage tanks that have not been impacted by radiation, purchase water from a neighboring town, transport water in tanker trucks or provide bottled water to the community.

What are the radionuclides that are likely to be detected in drinking water following a radiological incident?
The radionuclides that could contaminate water will depend on the type of incident. There are specific radionuclides, such as cesium-137, iodine-131, yttrium-90 and strontium-90, which are of particular interest for radiological releases from nuclear power plants. Different radionuclides can be associated with other incidents that involve a radiological dispersal device (RDD) or improvised nuclear device (IND). For additional information on the types of radionuclides associated with various types of radiological incidents please visit: http://www.remm.nlm.gov/typesofevents.htm.

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To: marvlewis@juno.com[marvlewis@juno.com]
From: Hernandez-Quinones, Samuel
Sent: Thur 6/16/2016 6:27:04 PM
Subject: Proposed Drinking Water PAG
EPA-HQ-OAR-2007-0268-0211.pdf

Mr. Lewis,

I am contacting you in response to your message to Lisa Christ regarding the drinking water PAG.

I understand that you had some difficulties accessing the PAG document, in this email I am including a direct link to the PAG document as well as attaching a pdf copy of the document for your convenience.

https://www.regulations.gov/index.jsp#!documentDetail;D=EPA-HQ-OAR-2007-0268-0211

Have a good day

Sam

==========

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"USEPA Protecting Human Health and the Environment"

United States
Environmental
Protection Agency

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June 2016

Draft Protective Action Guide (PAG) for Drinking Water

Draft Protective Action Guide (PAG) for Drinking Water

Prepared by:

U.S. Environmental Protection Agency
Office of Water
Office of Ground Water and Drinking Water
Washington, DC 20460

Date: June 2016

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Draft Protective Action Guide (PAG) for Drinking Water

1.0 INTRODUCTION

This proposal presents the protective action guide (PAG) and planning guidance to help protect the public in the event of a radiological incident that affects drinking water sources. A PAG is the projected dose to an individual from a release of radioactive material at which a specific protective action to reduce or avoid that dose is recommended.

The protective action for the drinking water exposure pathway is to restrict the use of contaminated water for drinking purposes and to provide alternative drinking water for the affected community. The drinking water PAGs apply during the intermediate phase of an incident, which may last for weeks to months[1]. This guidance only provides recommendations and does not confer any legal rights or impose any legally binding requirements upon any member of the public, states, or any other federal agency[2].

2.0 THE DRINKING WATER PAG

Currently there is no intermediate PAG for drinking water. Drinking water is an essential necessity for all people. The EPA determined, given the drinking water contamination that occurred in Japan following the Fukushima event, that a drinking water PAG is necessary. This proposal intends to provide the necessary tools to inform the level at which local emergency responders should restrict consumption of drinking water contaminated during a radiological emergency. In addition, based on public comment received in response to the revised interim PAG manual (2013), EPA believes that this proposal will make the overall PAG document a more robust and complete tool to be used by emergency responders.

EPA is proposing a two-tier drinking water PAG that would be used during the intermediate phase following a radiation incident: 500 millirem ((mrem) (5 millisievert

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[1] The intermediate phase is defined as the period beginning after the source and releases have been brought under control (has not necessarily stopped but is no longer growing) and reliable environmental measurements are available for use as a basis for decisions on protective actions and extending until these protective actions are no longer needed. The intermediate phase includes protective action recommendations for relocation of the public, worker exposure, reentry, food interdiction, and water interdiction. This phase may last from weeks to months and could also overlap the early phase (hours to days) and late phase (months to years).

[2] This guidance does not address or impact actions occurring under other statutory authorities such as the United States Environmental Protection Agency's (EPA) Superfund program, the Nuclear Regulatory Commission's (NRC) decommissioning program, or other federal or state programs. As indicated by the use of non-mandatory language such as "may," "should" and "can," this guidance only provides recommendations and does not confer any legal rights or impose any legally binding requirements upon any member of the public, states, or any other federal agency.

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(mSv)) projected dose[3] for the general population (defined as anyone over age 15, excluding pregnant women and nursing women), and 100 mrem (1 mSv) projected dose for pregnant women, nursing women and children age 15 and under[4].

EPA expects that the responsible party for any drinking water system adversely impacted during a radiation incident will take action to return to compliance with Safe Drinking Water Act (SDWA) maximum contaminant levels as soon as practicable. The proposed drinking water PAG provides a level of protection for the general population consistent with PAGs currently in place for other media in the intermediate phase (i.e., the Food and Drug Administration's 500 mrem PAG for ingestion of food[5,6]) and provides an additional level of protection for the most sensitive life stages. Intermediate phase doses can be projected using a one-year duration and compared to the PAG so that actions can be taken to avoid the exposure.

The already promulgated FDA food PAG and this proposed EPA drinking water PAG are designed to complement each other, and allow emergency response officials to account for and address doses from both eating contaminated food and drinking contaminated water. The food ingestion and drinking water pathways are inherently related because both address exposure through ingestion. In addition, water may be used in the preparation of some food products, and radionuclides in water may affect crops and ultimately enter the food supply. The FDA food PAG accounts for water intrinsic in food as purchased and EPA's proposed PAG accounts for drinking water, including water added to foods during preparation[7].

PAGs for both food and drinking water are needed because a radiological incident may affect the food supply and drinking water differently. In addition, because drinking water is usually locally controlled and food is frequently shipped in from distant locations, different and separate interdiction approaches would be appropriate. Finally, as explained in the revised interim PAG manual (2013)[8], the various PAGs are designed to work in concert, allowing emergency responders to choose the exposure reduction strategies that match the exposure scenario, community needs, and resources available in the particular emergency.

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[3] All dose values expressed as Committed Effective Dose (CED) projected over one year. The CED, as defined in FGR-13 (1999) and ICRP 103 (2007), is the sum of the product of all organ doses times their tissue weighting factors.

[4] Emergency management officials may consider whether it is appropriate to extend the lower tier to individuals beyond age 15 or to women who are trying to get pregnant or who believe they might be pregnant.

[5] Food and Drug Administration (FDA). 1998. *Accidental Radioactive Contamination of Human Food and Animal Feeds: Recommendations to State and Local Agencies.* Available online at: http://www.fda.gov/downloads/MedicalDevices/.../UCM094513.pdf

[6] FDA. 2004. Supporting Document for Guidance Levels for Radionuclides in Domestic and Imported Foods. Docket No. 2003D-0558.

[7] Liquid beverages as well as milk are covered under the FDA food PAG.

[8] EPA. 2013. Draft PAG Manual for Interim Use and Public Comment. Available online at: http://www2.epa.gov/sites/production/files/2014-11/documents/pag-manual-interim-public-comment-4-2-2013.pdf.

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While FDA and EPA would work closely together in a radiological response, the two agency's authorities are separate so different strategies may be needed to protect drinking water and the food supply.

A PAG is intended as a point of reference to aid emergency response managers in their decision-making. After a particular situation stabilizes and becomes more clearly defined, local authorities may wish to modify the PAG level they consider to be appropriate in order to implement longer-term dose reduction strategies. EPA expects that the responsible party for any drinking water system adversely impacted during a radiation incident will take action to return to compliance with maximum contaminant levels (MCLs) as soon as practicable.

Should a major radiological event occur, emergency response officials should consider potential doses from all affected pathways (e.g., airborne plume, ground contamination, drinking water, foods) when making protective action decisions. Consideration of the specific conditions facing a community should be used in determining how each PAG should be implemented. Protective actions might include restrictions on consumption of garden produce, locally produced foods or embargo on sales of certain products, as well as drinking water actions described in Section 6.0 of this proposal. Local decision makers will need to determine the appropriate PAGs depending on projected risk. For the PAGs, exposure routes are divided up by time and circumstance to allow the many different potential protective actions to be tailored to the specific risks that must be addressed. The full PAG Manual addresses all of the other pathways (plume inhalation, immersion, ground shine, skin and thyroid doses in particular, long term exposure to contamination, reentry and return to complete cleanup work, etc.) but always within parameters appropriate to a corresponding PAG.

Section 7.0 explains how to calculate Derived Response Levels (DRLs) for radionuclides likely to appear in drinking water following a radiological contamination incident[9]. DRLs are concentrations of radionuclides in drinking water that correspond to EPA's proposed PAG of 100 mrem and 500 mrem. DRLs are essential because a PAG identifies a radiation dose rather than a quantity of radionuclides that can be measured directly in drinking water. DRLs are expressed in units of picocuries per liter (pCi/L) or becquerel per liter (Bq/L), and can be directly compared to measured radionuclide concentrations in finished drinking water. In the absence of site-specific DRLs developed by emergency responders acquainted with local conditions, EPA recommends using these DRLs, which are indicative of a worst case scenario in which there is no decay of isotopes over the exposure period, to guide actions to protect the public in the event of a radiological incident that affects drinking water sources.

[9] EPA selected I-131, Sr-90/Y-90, and Cs-137 as indicator isotopes likely to appear in water following a radiation contamination incident, these were selected based on previous documented experience.

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3.0 FACTORS EPA CONSIDERED WHEN ESTABLISHING THE DRINKING WATER PAG

Section 1.3.2 of the revised interim PAG manual (2013)[10] provides the following three principles for establishing PAGs.

1. Prevent acute effects
2. Balance protection with other important factors and ensure that actions result in more benefit than harm
3. Reduce risk of chronic effects

EPA crafted the drinking water PAG with these same principles in mind. Specifically, consideration was given to the acute effects of exposure to radiation and lifetime risk of cancer based on age and drinking water intake. EPA made use of the risk conversion factors set forth in Federal Guidance Report No. 13 (FGR-13)[11] and considerations of risk to the unborn set forth in National Council on Radiation Protection and Measurements (NCRP) Report No. 174.[12]

In preparing this proposal, EPA gave careful consideration to public feedback received on the revised interim PAG manual (2013) request for comments on adopting a drinking water PAG.[13]

This proposed drinking water PAG was developed based on reducing risks associated with ingesting drinking water contaminated with radionuclides. EPA also considered the potential radiation dose people could receive from various other uses of contaminated water, including showering, bathing, and dishwashing. In the United States, people typically shower, bathe, and wash dishes using the same source of water that they use to drink, but, for the radionuclides of interest, dermal and inhalation exposures from these activities generally represent much smaller risk than drinking contaminated water. Protection of a community's drinking water supply based on assumptions about ingestion will also protect the population from undue risk from contaminated drinking water by other routes of exposure.

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[10] EPA. 2013. Draft PAG Manual for Interim Use and Public Comment. Available online at: http://www2.epa.gov/sites/production/files/2014-11/documents/pag-manual-interim-public-comment-4-2-2013.pdf.

[11] EPA. 1999. Cancer Risk Coefficients for Environmental Exposure to Radionuclides. Federal Guidance Report #13. Available online at: http://www.epa.gov/rpdweb00/docs/federal/402r-99-001.pdf.

[12] Brent, R.L., Frush, D.P., Harms, R.W., and M.S. Linet. 2013. *Preconception and Prenatal Radiation Exposure: Health Effects and Protective Guidance.* National Council on Radiation Protection. Report #174.

[13] Public feedback on the draft PAG Manual was requested in the Federal Register Notice Vol. 78, No. 72, p. 22257, April 15, 2013.

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4.0 RATIONALE FOR A TWO-TIER DRINKING WATER PAG

The two-tier PAG consists of 500 mrem for the general population (i.e., anyone over age 15, excluding pregnant women and nursing women), and a more stringent PAG of 100 mrem to inform protective actions for pregnant women, nursing women and children age 15 and under. Fetuses, infants and children are at greater risk from radiological exposures than adults due to the greater sensitivity of the developing body to the potential harmful effects of radiation and the longer dose commitment period for the longer-lived radionuclides that clear slowly from the body. A newborn that ingests radioactive material in water would be expected to be subject to the effects of that radiation for a longer period of time than if the same dose was experienced by an adult.

There are precedents for establishing a more protective threshold for radiological risks for younger members of the population due to the greater radiosensitivity of children versus adults. Following the Fukushima nuclear plant releases in 2011, the Japanese authorities set an emergency drinking water standard for infants that was one-third of the value for adults.[14]

PAGs and other guidance materials established by FDA for thyroid blocking with potassium iodide[15] and for ingestion of food[16] both include separate thresholds for more sensitive age groups.

For the sake of establishing clear and executable decisions in the intermediate phase of emergency response, EPA proposes a uniform PAG for fetuses, infants, and children, even though there may be considerable differences in the transmission of radiological drinking water contaminants to a fetus via the placenta, to an infant via formula, and to a child via direct consumption. Specifically, we have proposed a PAG level designed to protect the most sensitive of the three subgroups from exposure to radioactivity in drinking water following a radiological incident. Keeping PAGs relatively simple helps to minimize confusion during their implementation. Therefore, DRLs provided in Section 7.0 were selected by assessing risks to all age groups and choosing the most conservative concentration to the most sensitive age group.

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[14] World Health Organization (WHO). 2011. FAQs: Japan nuclear concerns. Page 9, water contamination. September 2011. Available online at: http://www.who.int/hac/crises/jpn/faqs/en/index8.html.

[15] FDA. 2001. *Guidance: Potassium Iodide as a Thyroid Blocking Agent in Radiation Emergencies.* Available online at: http://www.fda.gov/downloads/Drugs/.../Guidances/ucm080542.pdf

[16] FDA. 1998 *Accidental Radioactive Contamination of Human Foods and Animal Feeds: Recommendations for State and Local Agencies.* http://www.fda.gov/downloads/MedicalDevices/.../UCM094513.pdf

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The PAG of 500 mrem for the general population is designed to be used in concert with the FDA food PAG[17] since many of the considerations for a food PAG also apply to drinking water. It is also consistent with the guidance value of 500 mrem over one year established by the Department of Homeland Security as an intermediate-phase PAG for drinking water interdiction.[18] A PAG of 100 mrem provides the most sensitive members of the population a reasonable level of protection from exposure to radioactivity in drinking water following a radiological incident.

4.1 Other Standards

The current public radiation protection standard of 100 mrem per year effective dose is set forth in Nuclear Regulatory Commission (NRC) regulations (i.e., 10 CFR Part 20.1301). The International Commission on Radiation Protection[19] recommends reference levels in the range of 2,000 to 10,000 mrem (20 to 100 mSv) for protection of human health in emergencies, and in the range of 100 to 2,000 mrem (1 to 20 mSv) for occupational exposure, exposure by caregivers, or residential radon exposure. Based on a risk reduction approach EPA is proposing its drinking water PAGs at the lower (more stringent) end of the latter range as an added layer of precaution.

Following the Fukushima nuclear plant releases in 2011, there was concern about levels of radioactive iodine-131 (I-131) in drinking water. The Japanese authorities applied a two-tier set of provisional emergency standards to I-131 in water: 300 Bq/L (about 8,100 pCi/L) for adults and 100 Bq/L (about 2,700 pCi/L) for infants (specifically for drinking water used to prepare baby formula). According to informational materials assembled by the World Health Organization in the wake of the incident,[20] these emergency drinking water standards were provisional regulation values established by the Japanese Food Sanitation Act, as indicated by the Nuclear Safety Commission of Japan. These standards were precautionary and took international guidance into consideration, including recommendations of the International Atomic Energy Agency and the International Commission on Radiological Protection. The infant standard, furthermore, was equivalent to the international guideline set by Codex Alimentarius[21] for infant food.

Under the Safe Drinking Water Act (SDWA), EPA established maximum contaminant levels (MCLs) for radiological contaminants in drinking water. The National Primary Drinking Water Regulations (NPDWR) for radionuclides, set forth in 40 CFR Part 141,

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[17] FDA. 1998 *Accidental Radioactive Contamination of Human Foods and Animal Feeds: Recommendations for State and Local Agencies.* http://www.fda.gov/downloads/MedicalDevices/.../UCM094513.pdf

[18] See Planning Guidance for Protection and Recovery Following Radiological Dispersal Device (RDD) and Improvised Nuclear Device (IND), Table 1 in 73 FR 45029, August 2008, http://www.gpo.gov/fdsys/pkg/FR-2008-08-01/pdf/E8-17645.pdf.

[19] International Commission on Radiological Protection (ICRP). 2007. *The 2007 Recommendations of the International Commission on Radiological Protection*, Annals of the ICRP, Volume 37, Nos.2-4, 2007, Publication 103, ISSN 0146-6453, ISBN 978-0-7020-3048-2, pp. 96-98

[20] WHO. 2011.

[21] http://www.codexalimentarius.org/about-codex/en/.

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effectively adopt a dose-based limit of 4 mrem/yr for beta particle and photon radioactivity. These requirements are based on lifetime exposure criteria, which assume 70 years of continued exposure to contaminants in drinking water. The Agency determined that it may not be appropriate to base protective actions during short-term emergency incidents on lifetime exposure criteria. While the SDWA framework is appropriate for day-to-day normal operations, it does not provide the necessary tools to assist emergency responders with determining the need for potentially ongoing protective actions during the intermediate phase of a response. However, regardless of the cause of an incident, EPA expects that the responsible party for any drinking water system impacted during a radiation incident will take action to return to compliance with the NPDWR levels by the earliest feasible time.

5.0 INTERPRETING AND APPLYING THE PAG

The drinking water PAG is intended primarily to guide planning and decision-making efforts by local and state officials, including drinking water providers, during the intermediate phase of a radiological emergency when surface water sources are particularly vulnerable to contamination from deposition of radioactive material from the atmosphere. Actions to protect water sources may be implemented at other levels and at any time following a radiological incident, and even before an anticipated release occurs. The goal is to keep the dose to the public as low as reasonably achievable. Radiation doses should be reduced to below SDWA MCLs as soon as practicable.

5.1 Interpreting the two-tier PAG

EPA is proposing a two-tier PAG: 500 mrem for the general population (anyone over age 15, excluding pregnant women and nursing women) and 100 mrem for pregnant women, nursing women and children.

Authorities have flexibility on how to apply the PAG. In some cases they may find it prudent to use the PAG of 100 mrem as a target for the whole population, while in other circumstances, authorities may find that it makes sense to use both targets simultaneously. For example, emergency managers can use a two-tiered approach to focus on protecting the most sensitive population with limited alternate water resources. If bottled water must be rationed, for example, authorities may make the bottled water available to children, pregnant women and nursing women, and instruct the rest of the population to use a public drinking water supply that will not trigger the 500 mrem PAG.

As stated above, the PAGs are intended as guidance, and local authorities should take into account local circumstances (e.g., incident scope and community needs) when implementing a course of action to protect the public.

5.2 Operationalizing PAGs as Derived Response Levels (DRLs)

The PAG specifies a radiation dose to avoid via drinking water exposure projected over one year. In order to determine whether a PAG should be implemented, authorities will need to establish a relationship between the measured concentration of one or more

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radionuclides in finished drinking water and the radiation dose members of the population might experience as a result of drinking contaminated water. Incident-specific factors that may be taken into consideration include:

1. The radionuclides being emitted in this particular emergency situation
2. The rate and timing of entry of the radionuclides into a drinking water supply, via atmospheric deposition or by other means
3. The rate of natural attenuation of the radionuclides
4. The estimated potential duration of public exposure to contaminated drinking water
5. The estimated daily consumption of contaminated drinking water

Those responsible for implementing PAGs will need to convert PAGs into Derived Response Levels (DRLs) in units of Bq/L or pCi/L. Section 7.0 of this document provides DRLs and explains how they can be calculated. Selected dose conversion factors and standard estimates of daily drinking water consumption for various age groups are also provided, along with references to informational resources.

While the PAG Manual is primarily for advance planning, there are specific radionuclides, including cesium-137 (Cs-137), iodine-131 (I-131) and strontium/yttrium-90 (Sr-90/Y-90) that are of particular interest for radiological incident scenarios where drinking water sources might be contaminated. Section 7.0 presents default DRLs for these radionuclides to aid emergency managers in making water restriction decisions involving these contaminants. DRLs for these radionuclides are presented as examples for purpose of illustration. If other radionuclides are present, DRLs should be calculated using the same methodology, as discussed in Section 7.0.

5.3 Practical Considerations

After deposition has ended, radionuclide concentrations present in a water supply may decline at rates determined by half-lives of the individual nuclides, or may decline faster by dilution with uncontaminated water, or may even increase after rainfall and seasonal thaw events. The concentration of radionuclides in drinking water as a function of time after the incident can be measured, estimated or modeled based on knowledge of the incident, including radionuclide sources and the properties of the drinking water supply. Such estimates should be validated by monitoring or sampling, as discussed in Section 6.1.

Unlike naturally-occurring radionuclide contamination of drinking water from minerals present in geological formations, for a radiation release incident, ground water sources are expected to be less vulnerable to contamination than surface water sources, but this should be confirmed by monitoring or sampling. The potential for ground water to become contaminated will greatly depend on whether the ground water resource is close to the surface or is from a deep aquifer bounded by an aquitard, as well as on rainfall rate and the composition of the overlying soil (which will affect the rate at which contaminants deposited on soil will migrate to the ground water resource).

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Section 6.3 discusses actions that authorities can take to minimize radiation doses from drinking water. Because radionuclides decay over time, early interventions such as restricting use of contaminated water immediately after the incident may be most effective in reducing radiation dose to the population. Such decisions may need to be made based on limited information. Authorities may find it prudent to take such action even before field sample measurements or modeled estimates of radiation dose have been calculated and validated.

6.0 PLANNING AND TAKING ACTION

This section discusses actions that state and/or local authorities and drinking water utilities can take to protect the public in the event that a water supply is affected by a radiological contamination incident. Different actions described here may be appropriate for initial and intermediate phases depending on local resources. This section does not constitute a complete handbook for radiological emergency response, but it describes considerations that can be included in comprehensive emergency planning at the state, local and utility level. Actions that public authorities and drinking water providers should take include water monitoring (described in Section 6.1), public notification (described in Section 6.2), and mitigation measures to protect the water supply and the water-consuming public (described in Section 6.3).

Preventive action, such as temporary closure of water system intake valves to prevent a contaminant plume from entering the system, may be taken in advance of an anticipated release; it is not necessary to wait until drinking water contamination is detected. Emergency response plans need to consider whether sufficient storage capacity is available to support the community's fire suppression and sanitation needs while the intake valves are closed.

Emergency planning provides the opportunity to develop state, local and utility-specific plans and implementation procedures that reflect the unique needs of a particular community. Advance planning can provide clarity and facilitate the decision-making process during a radiological emergency.

6.1 Monitoring and Characterization of Contaminants

A comprehensive radiological surveillance program to monitor concentrations of radionuclides of interest in both source water and finished drinking water would provide an indication of whether any adjustments are necessary or if the actions being taken are effective.

The NPDWR for radionuclides requires community water systems (CWSs) to conduct monitoring at each entry point to the distribution system to ensure that every customer's

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water does not exceed the MCLs for radionuclides.[22] All CWSs are required to monitor for gross alpha, radium-226/228, and uranium. In addition, CWSs designated by the state as "vulnerable"[23] and those using waters "contaminated"[24] by effluents from nuclear facilities must also conduct monitoring for beta particle and photon radioactivity. If a water system is directed by the primacy agency to collect samples for compliance purposes, approved analytical methods must be used.

In the event of a radiological contamination incident, state officials may require public water systems to immediately collect additional samples for radionuclides, including beta particle and photon activity. However, EPA recognizes that during an emergency situation it may be necessary to identify alternative sampling and analytical approaches to obtain data to inform short-term actions by emergency response personnel. Many states have established Radiological Emergency Preparedness[25] programs designed to guide sample collection and analysis and to advise emergency managers in a radiological emergency. Additionally, the Federal Radiological Monitoring and Assessment Center (FRMAC)[26] can deploy monitoring and sampling field teams and provide dose assessment expertise to assist states and local communities in responding to an emergency. See the National Response Framework, Nuclear/Radiological Incident Annex[27] for information on roles and capabilities.

Once the situation is better characterized and systems are working towards returning to compliance, monitoring should be conducted at entry points to the distribution systems using approved analytical methods. EPA provides rapid laboratory analysis methods for selected radionuclides to expedite the analytical turnaround time while simultaneously meeting measurement quality objectives.[28] Samples should be collected from entry points to the distribution system. Challenges may arise from variability in environmental matrices. Advance emergency planning can help to achieve sample representativeness and homogeneity relative to routine samples.

If members of the public are served by drinking water from household cisterns or private wells, local officials should consider how monitoring should be undertaken to determine levels of target radionuclides and assess the risks posed to these populations.

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[22] For more information about monitoring requirements for the Radionuclides Rule see the "Radionuclides Rule: A Quick Reference Guide" (EPA 816-F-01-003, June 2001) or "Implementation Guidance for Radionuclides" (EPA 816-F-00-002, March 2002).

[23] For more information see 40 CFR 141.26(b)(1).

[24] For more information see 40 CFR 141.26(b)(2).

[25] http://www.fema.gov/radiological-emergency-preparedness-program

[26] The Federal Radiological Monitoring and Assessment Center (FRMAC) is a federal asset available on request by the Department of Homeland Security (DHS) and state and local agencies to respond to a nuclear or radiological incident.

[27] Document is available online at: http://www.fema.gov/media-library/assets/documents/25554

[28] EPA. 2014a. Rapid Radiochemical Methods Applicable to Selected Radionuclides for Environmental Remediation Following Radiological Incidents. Third Edition. Front matter available online at: http://www.epa.gov/narel/Docs/Preface%20to%203rd%20Edition%20%28Online%29%20046-14.pdf. Rapid methods are available online at: http://www.epa.gov/narel /rapid_methods.html

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6.2 Public Notification

An emergency response plan should include a strategy for keeping the community informed of the actions being taken by authorities and clearly delineate roles and responsibilities of local officials and emergency responders. This includes communicating to customers of CWSs and (if applicable) to those who rely on household cisterns and private wells. It is critical for water utilities to participate in the emergency response planning activities.

If compliance monitoring indicates that contamination levels exceed the MCL for any radionuclide, water systems are required to issue public notice on a "Tier 2" time frame (i.e., as soon as practical, but no later than 30 days after the system learns of the violation). CWSs should be able to issue repeat notices as required. However, states may determine that the notification requirement should be elevated to a "Tier 1" Public Notification (i.e., as soon as practical, but no later than 24 hours) based on a significant potential for serious adverse effects on human health due to short-term exposure.[29]

During a response to a radiological incident, water systems may have difficulty with issuing public notifications in addition to managing the response to the contamination event. The state may issue public notification on behalf of the water system (40 CFR 141.210(a)). This would allow the state to deliver a consistent message to all affected customers and allow the system to concentrate its efforts on returning to operation or returning to compliance in the event of a radionuclides MCL violation. For more information see the Revised Public Notification Handbook (EPA 816-R-09-013, March 2010).

State and local authorities should be proactive in communicating about risks and uncertainties and providing clear instructions to the public. For any incident response requiring coordinated federal support, refer to the National Response Framework and Emergency Support Function 15, External Affairs Annex, for roles and response protocols.

6.3 Additional Actions to Reduce Levels of Contamination

In the initial phase following a radiological incident, officials should take reasonable precautionary measures (i.e., closing intake valves) to protect water sources as soon as notification of a radiological release or impending release is received. Moving into the intermediate phase, as data are obtained from monitoring programs (including sampling and analysis of water upstream and downstream of a water system intake structure and within the distribution system), officials should benchmark observed concentrations against the default DRLs discussed in Section 7.0 or situation specific DRLs that account for specific isotopes present, release patterns, and decay. Officials would then be in a position to make informed decisions about the need to implement protective

[29] For more information see 40 CFR 141.202(a), Table 1(9), Special public notices: Occurrence of a waterborne disease outbreak or other waterborne emergency.

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actions. Water system officials should be in close communication with their primacy agency (e.g., state/county regulators) prior to taking protective actions.

Options available to water systems to reduce radiation dose to drinking water customers include applying treatment technologies, relying on back-up storage, blending water, accessing alternative water sources, and rationing of uncontaminated water or a combination of these actions. Examples of these options are described briefly below. Technical and economic burden on smaller systems may be reduced by pooling resources with other water systems (e.g., establishing interconnections, sharing technical and operator staff, and sharing of supplies and equipment). As part of emergency planning efforts, local officials should consider the possibility of temporary rationing of uncontaminated or treated water if supplies are inadequate to meet normal demand.

All of these options require advanced planning and should be evaluated and included in States plans as appropriate. Guidance on developing emergency drinking water supplies is available from EPA.[30] The Centers for Disease Control and Prevention also provide resources and guidance for establishing emergency water supplies and communicating water advisories to the public.[31]

6.3.1 Treating Contaminated Water

Systems can treat contaminated water to reduce elevated radionuclide levels. Four treatment technologies are classified by EPA as Best Available Technologies (BATs) for removing radionuclides from drinking water: coagulation/filtration, ion exchange, lime softening and reverse osmosis. EPA has also listed these BATs as Small System Compliance Technologies (SSCTs) for radionuclides treatment, along with less commonly used techniques such as green sand filtration, co-precipitation with barium sulfate, electrodialysis/electrodialysis reversal, pre-formed hydrous manganese oxide filtration and activated alumina. Further information on radionuclide treatment options is available from EPA.[32]

Removal efficiency for specific radionuclides will vary across available technologies and may depend on technology-specific parameters (e.g., ion exchange effectiveness depends on pH, resin selected and presence of other ions). In addition, liquid and solid treatment residuals with elevated radiation levels may have special disposal

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[30] EPA. 2011b. *Planning for an Emergency Drinking Water Supply,* EPA 600/R-11/054, June 2011.

[31] CDC. 2014. Drinking Water Advisory, Planning, & Emergency Response Resources. Available on the Internet at: http://www.cdc.gov/healthywater/emergency/drinkingwateradvisory.html Last updated December 2, 2014.

[32] EPA. 2015a. Radionuclides in Drinking Water -- Compliance Options: Treatment Technology Descriptions. Available on the Internet at: http://cfpub.epa.gov/safewater/radionuclides/radionuclides.cfm. See also EPA. 2002a. *Radionuclides in Drinking Water: A Small Entity Compliance Guide.* EPA 815-R-02-001, 2002. (http://www.epa.gov/safewater/radionuclides/pdfs/guide_radionuclides_smallsystems_compliance.pdf).

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requirements. Disposal options may vary from one jurisdiction to another, and may depend on the type, concentration and volume of residuals. Further information on residual disposal considerations is available from EPA.[33]

6.3.2 Temporarily Closing Intake Valves

If the deposition of radionuclides into a river is limited in duration, only a portion of the water may become contaminated. A water system with enough storage capacity can temporarily close its intake valves and allow the contaminants to flow past the intake to prevent contamination from entering the distribution system.

If stored water supplies are not sufficient to meet community fire suppression and sanitation needs while intake valves are closed, the system could take other actions discussed in this section, including supplementing water supplies with alternate sources or implementing water use restrictions.

6.3.3 Establishing Interconnections to Neighboring Systems

If the water system is part of a larger, regional supply system, existing interconnections to an uncontaminated neighboring water supply could be activated. It might also be possible to construct temporary pipelines on an impromptu basis.

If this option is implemented, steps should be taken to prevent backflow from the contaminated system. Care will also need to be taken to ensure that the supply of water and treatment capacity at the uncontaminated system will adequately serve the larger population.

6.3.4 Blending Water Sources

If a source of uncontaminated water is available, a water system may choose to blend water from contaminated and uncontaminated sources of drinking water to minimize radiation doses from drinking water. The water may be blended using storage tanks or a common header to allow for complete mixing prior to distribution to customers.

6.3.5 Importing Water in Tanker Trucks

Under some circumstances (e.g., difficult terrain, urgent need), it may be more efficient or expedient to temporarily transport clean water by truck, rail or barge to distribution centers in the affected community than to lay down pipelines. State and local departments of public health, as well as emergency management agencies, typically have standards and requirements related to hauling water. Water systems would benefit from having procedures for importing water in tanker trucks documented in an emergency response plan. All water systems importing water by tanker should verify that their plan adheres to state and local requirements. If the water system's distribution

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[33] EPA. 2006a. *A System's Guide to the Management of Radioactive Residuals from Drinking Water Treatment Technologies*. EPA 816-F-06-012, August 2006. See also EPA. 2006b. *A System's Guide to the Identification and Disposal of Hazardous and Non-Hazardous Water Treatment Plant Residuals*. EPA 816-F-06-011, August 2006.

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system is not being used to provide the imported water, the needs of residents with limited transportation options and physical disabilities should be taken into account when selecting locations for distribution centers. The availability of suitable transport vehicles may limit use of this option.

6.3.6 Importing Bottled Water

Providing bottled water to the affected community is another possible option during an emergency situation. The water may come from a nearby water system or from a water bottling company. This option may be cost-effective during an emergency if water is needed quickly and if the length of the emergency does not require long-term action, such as the construction of an interconnecting pipe.

7.0 DERIVED RESPONSE LEVELS (DRLS)

EPA developed the radionuclide-specific default DRLs by calculating the radionuclide concentrations in drinking water that would result in projected radiation doses of 100 and 500 mrem, assuming one year of continuous exposure and average drinking water intake rates for children and adults.

Several considerations should be kept in mind when using these pre-calculated DRLs. The DRLs presented in Table 1 are calculated on the assumption that each radionuclide is the only radionuclide present in drinking water. DRLs are additive. In situations where multiple radionuclides are present, DRLs should be combined using a sum of fractions approach to ensure that the projected dose does not exceed the PAG of 100 or 500 mrem. (An example calculation is provided in Section 7.1.) Table 1 does not present DRLs for all radionuclides that may occur in drinking water following a contamination incident.

These default DRLs were calculated using a simplifying and conservative assumption that radionuclide levels will remain constant over the course of one year. This assumption would cover the most serious situations in which continuous release and replenishment of isotopes is ongoing. As such, the assumption provides an added level of protection in light of the many unknowns involved in an emergency. In fact, after the initial deposition event has occurred, concentrations may decline at rates determined by the half-lives of individual isotopes, or decline faster due to dilution with uncontaminated water, or could even increase after rainfall or subsequent deposition events. Some nuclides, like I-131, have half-lives measured in days, while others, like Cs-137, have half-lives measured in years.

The default DRLs in the PAGs are provided for convenience to allow local entities to make decisions about drinking water provided by public water systems quickly in the event of a radiological emergency. As one moves further into the intermediate phase, when the incident characteristics have been assessed, assumptions regarding duration of the radiological release and the half-life of nuclides involved as well as other factors may be considered by local decision makers in projecting risks and adapting mitigation

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measures. All radionuclides are covered by the assessment tools provided by FRMAC. For instance, if an alpha emitting isotope was of concern following a radiation contamination incident, it would be included in any calculations regarding protective actions for drinking water. As such, local officials may choose to work with FRMAC to calculate situation-specific DRLs that are based on information gained during the intermediate phase, including identification of specific isotopes, release patterns, and associated decay functions.

Early exceedance of the default DRL does not preclude the possibility that doses will stay below PAGs as radionuclide concentrations in water decline by a combination of radioactive decay and natural attenuation. If the concentrations of radionuclides do not exceed DRLs over the course of one year, doses will remain below the PAG.

Table 1. Default derived response levels (DRLs)[34] -- drinking water concentrations corresponding to specified doses (mrem) of select radionuclides, assuming one year of exposure at constant levels[35]

	DRLs for pregnant women, nursing women and children age 15 and younger – 100 mrem dose	DRLs for adults (excluding pregnant women and nursing women) – 500 mrem dose
Sr-90/Y-90[36]	1,000 pCi/L	7,400 pCi/L
Cs-137	6,140 pCi/L	16,570 pCi/L
I-131	1,310 pCi/L	10,350 pCi/L

The DRLs provided in Table 1 were derived by calculating life stage-specific DRLs (as described in section 7.2) for six different ages (Infant, 1, 5, 10, 15, and adults). For the most sensitive life-stages concentrations of individual radionuclides yielding a 100 mrem dose were calculated for each age group, then the most protective/lowest radioactivity concentration was selected as the DRL for the entire sensitive life-stage group, including pregnant and nursing women. The calculated values differ across individual

[34] Values provided in this table have been rounded.

[35] The calculated values provided in this table are intended to illustrate the methodology and conservative assumptions EPA believes are adequate to provide a reasonable level of protection to sensitive populations. Dose conversion factors, calculation methodologies as well as other comprehensive information regarding DRL development will be available and updated as needed in the FRMAC Assessment Manual.

[36] Y-90 is a radioactive decay product of Sr-90 and will normally be found alongside Sr-90 in the case of a Sr-90 release; therefore they are treated together. Solubility differences may cause less yttrium to be present, however it is a conservative assumption to include both in DRLs. When calculating the combined DRL, note that the dose coefficients (see Table 3) are additive.

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life-stages because each age group has a different dose conversion factor and drinking water ingestion rate.

For example, the sensitive life-stage group DRL for I-131 was derived by calculating the concentration of I-131 which yields a 100 mrem dose for each age group. In this case the resulting concentrations were: infants (2,110 pCi/L), 1 yr (1,860 pCi/L), 5 yr (1,310 pCi/L), 10 yr (1,950 pCi/L), and 15 yr (2,410 pCi/L). Since the lowest calculated concentration corresponds to the 5 year old (1,310 pCi/L), this value is the DRL that will be applied to be the most protective for the entire sensitive life-stage group.

7.1 Calculation of Default DRLs

DRLs may be calculated with the help of the following equations.

The dose (mrem or Sv) due to the ingestion of radionuclide *i* to age group *a* over time period *T* is calculated as follows:

$$D_{iaT} = I_{iaT} \times DCF_{ia}$$

Where:

D_{iaT} = Dose (in mrem or Sv) due to the ingestion of radionuclide *i* to age group *a* over time period *T*

I_{iaT} = The total intake of radionuclide *i* for age group *a* (in pCi or Bq) over time period *T*

DCF_{ia} = The dose conversion factor (also referred to as dose coefficient) for the ingestion of radionuclide *i* in drinking water and age group *a* (in mrem/pCi or Sv/pCi, or mrem/Bq or Sv/Bq). See section 7.4 for guidance on DCFs.

The quantity of radionuclide *i* ingested by age group *a* over a given time period, *T*, is calculated as follows.

$$I_{iaT} = C_i \times Ing_a \times T$$

Where:

I_{iaT} = The total intake of radionuclide *i* for age group *a* (in pCi or Bq) over time period *T.*

C_i = The concentration of radionuclide *i* in drinking water (in pCi/L or Bq/L). A simplifying assumption is made that the concentration of the radionuclide is constant over the time period *T*.

Ing_a = The daily ingestion rate of water for age group *a*, in L/day. See Section 7.3 for guidance on daily water ingestion rates.

T = The time period that the population is drinking contaminated water (days). In this analysis, the time period of interest is 365 days.

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For each age group *a* and radionuclide *i*, substituting the applicable PAG for the dose D_{iaT} and then solving for C_i yields the applicable DRL.

For example, the DRL for iodine-131 for an adult is calculated as follows:

$$DRL = PAG / (Ing_a * T * DCF_{ia})$$

$$DRL = 500 \text{ mrem} / (1.643 \text{ L/day} * 365 \text{ days} * 8.05 \text{ E-05 mrem/pCi})$$

$$= 500/4.83 \text{ E-02}$$

$$= 10{,}352 \text{ pCi/L}$$

Which is best rounded to 10,350 pCi/L considering the uncertainties.

7.2 Combining default DRLs for Multiple Radionuclides

If multiple radionuclides are present in the water supply, then it is recommended that the obtained concentrations of each radionuclide be divided by the provided DRL values. This provides a fraction of the allowed concentration (and the projected dose) for each radionuclide. If the sum of the fractions is less than 1, the total dose is assumed to be below the PAG values. Emergency response personnel may need to calculate the sum of fractions on an ongoing basis, as the concentrations of individual radionuclides may change over time. The sum of the fractions is expressed as follows:

$$F = \sum (C_i / DRL_i)$$

Where:

F = sum of the fractions

C_i = the concentration of radionuclide *i* in the water supply (pCi/L or Bq/L)

$DRL_{i\ (100 \text{ or } 500 \text{ mrem});}$ = derived response level for the ith radionuclide (pCi/L or Bq/L)

For example, if Sr-90/Y-90 and Cs-137 are the only radionuclides present in the drinking water, and Sr-90/Y-90 are present at 1,540 pCi/L and Cs-137 is present at 10,600 pCi/L, the combined dose exceeds the PAG of 100 mrem for fetuses, infants, and children:

$$F = \sum (C_i / DRL_i)$$

$$= (1{,}540 \text{ pCi/L} / 1{,}000 \text{ pCi/L}) + (10{,}600 \text{ pCi/L} / 6{,}140 \text{ pCi/L})$$

$$= 1.54 + 1.73$$

$$= 3.27$$

$3.27 > 1$, so the PAG is exceeded.

The same concentrations do not exceed the PAG of 500 mrem for adults:

$$F = \sum (C_i / DRL_i)$$

$$= (1{,}540 \text{ pCi/L} / 7{,}415 \text{ pCi/L}) + (10{,}600 \text{ pCi/L} / 16{,}570 \text{ pCi/L})$$

$$= 0.21 + 0.64$$

$$= 0.85$$

$0.85 < 1$, so the PAG is not exceeded.

7.3 Water Ingestion Rates

Table 2 presents mean values for tap water consumption taken from the CD supplement to FGR-13.[37] Other sources of estimated drinking water ingestion rates are available (e.g., EPA's *Exposure Factors Handbook*[38]), but the ingestion rates presented in FGR-13 were specifically designed with corresponding age ranges to be used in conjunction with other data from FGR-13. Values are provided for males and females in various age groups. Since the ingestion rates for males are higher (and therefore more conservative) than those for females, EPA elected to use the intake values for males to represent each age group in the calculation of DRLs in Table 1. In addition, for the calculation of the adult DRL, EPA made the conservative assumption that the ingestion rate would be assigned the highest value within the adult category, the 50 year old male, at an estimated 1.643 L/day.

Table 2. Mean Drinking Water Ingestion Rates from FGR-13

Age (years)	Tap Water (L/day)	
	Male	Female
0	0.191	0.188
1	0.223	0.216
5	0.542	0.499
10	0.725	0.649
15	0.900	0.712
20	1.137	0.754
50	1.643	1.119
75	1.564	1.179

Source: CD Supplement to FGR-13, Table 3.1.

[37] EPA. 2002b. Federal Guidance Report 13. Cancer Risk Coefficients for Environmental Exposure to Radionuclides: CD Supplement, EPA-402-C-99-001, Rev. 1.

[38] EPA. 2011a.

7.4 Dose Coefficients, or Dose Conversion Factors (DCF) (Sv/Bq Ingested)

The effective whole body dose per Bq ingested of various radionuclides in water, for various age groups, can be found on the CD supplement to FGR-13.[39] These DCF values apply to both males and females. Table 3 presents DCFs for a few representative radionuclides of interest, converted to U.S. units for convenience.

Table 3. Dose Conversion Factors[40]

Age	DCFs (mrem per pCi ingested), from FGR-13			
	Sr-90	Y-90	Cs-137	I-131
Infant (100 day old)	8.40E-04	1.16E-04	7.79E-05	6.82E-04
1 year old	2.68E-04	7.41E-05	4.58E-05	6.62E-04
5 year old	1.73E-04	3.69E-05	3.58E-05	3.83E-04
10 year old	2.21E-04	2.18E-05	3.75E-05	1.94E-04
15 year old	2.92E-04	1.24E-05	4.95E-05	1.27E-04
Adult	1.02E-04	9.94E-06	5.02E-05	8.05E-05

Source: CD Supplement to FGR-13.

[39] EPA. 2002

[40] The DCFs in this table show the variation across age groups and nuclides and are provided to illustrate the conservative methodology and assumptions EPA believes are adequate to provide a reasonable level of protection to sensitive populations. Additional information including updated dose conversion factors, calculation methodologies as well as other comprehensive information regarding DRL development will be appended to the FRMAC Assessment Manual.

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To: Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]; Christ, Lisa[Christ.Lisa@epa.gov]
Cc: Wadlington, Christina[Wadlington.Christina@epa.gov]; Ellis, Jerry[Ellis.Jerry@epa.gov]
From: Nesky, Anthony
Sent: Tue 6/14/2016 6:28:40 PM
Subject: Request for extension of the comment period

Dear Lisa and Sam:

We received the following request for an extension of the comment period in the radiation website "Inbox." Do you want us to put it in the Docket. If so, I suggest that we send the following reply.

Thank you for contacting us. The deadline for commenting on the proposed drinking water Protective Action Guide (PAG) is July 25, 2016. Your request has been placed in the Docket and is under consideration. In the future, please enter comments or further correspondence on this proposal to the Docket: You can do so on line:

Visit Docket ID EPA-HQ-OAR-2007-0268 to view the proposal and submit comments online.
Note: If the above link does not work, copy and paste the following web address into your browser: https://www.regulations.gov/#!docketDetail;D=EPA-HQ-OAR-2007-0268

Comments are due by July 25, 2016. To be considered, comments must be submitted in writing to Docket ID EPA-HQ-OAR-2007-0268. Instructions for submitting comments by mail are in the Notice of Availability from the Federal Register.

Tony Nesky

Center for Radiation Information and Outreach

Tel: 202-343-9597

nesky.tony@epa.gov

-----Original Message-----
From: drupal_admin@epa.gov [mailto:drupal_admin@epa.gov]

Sent: Tuesday, June 07, 2016 9:05 PM
To: Radiation Questions <Radiation.Questions@epa.gov>
Subject: Contact Us - Radiation Protection

Submitted on 06/07/2016 9:05PM

Submitted values are:

Name: Marylia Kelley

Email: marylia@trivalleycares.org

Comment or Question: On what date are you planning to post the Federal Register notice re: the PAGs for radioactivity in water? For how many days after are you planning to accept public comments? If the answer is 45-days, please accept this note as a formal request from Tri-Valley CAREs in Livermore, CA for 45 days of additional time - i.e., for a total comment period of 90 days. Thank you in advance for your consideration.

To: Christ, Lisa[Christ.Lisa@epa.gov]; Burneson, Eric[Burneson.Eric@epa.gov]
Cc: Greene, Ashley[Greene.Ashley@epa.gov]
From: Grevatt, Peter
Sent: Tue 6/14/2016 12:28:06 PM
Subject: RE: EPA proposes weakening radioactivity standard?

Thanks. Can you give me a few bullet points on these questions? Was a number ever shared with the public previously?

From: Christ, Lisa
Sent: Tuesday, June 14, 2016 7:52 AM
To: Grevatt, Peter <Grevatt.Peter@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Greene, Ashley <Greene.Ashley@epa.gov>
Subject: RE: EPA proposes weakening radioactivity standard?

Peter,

EPA did not propose a PAG for drinking water in the last Administration. OAR was preparing a proposal but nothing was published. Also, we should clarify this is guidance only, not a standard.

Let me know if you'd like more background

Lisa

From: Grevatt, Peter
Sent: Tuesday, June 14, 2016 6:51 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Greene, Ashley <Greene.Ashley@epa.gov>
Subject: FW: EPA proposes weakening radioactivity standard?

I can reach out to Rumpler later today. I think Joel is looking for more on how our levels compare to those proposed in the last administration, how they compare to chest x-rays (can be discerned from the chart that Lisa included) and the length of the intermediate phase (1 year). I'll forward to Joel as soon as you can provide. Thanks, P.G.

From: Beauvais, Joel
Sent: Monday, June 13, 2016 7:26 PM
To: Grevatt, Peter <Grevatt.Peter@epa.gov>
Cc: Burneson, Eric <Burneson.Eric@epa.gov>; Greene, Ashley <Greene.Ashley@epa.gov>
Subject: Re: EPA proposes weakening radioactivity standard?

Thx this is helpful. can I get answers to the other questions below and can one of you guys reach out to John Rumpler on this?

On Jun 13, 2016, at 5:29 PM, Grevatt, Peter <Grevatt.Peter@epa.gov> wrote:

> Came in while we were in this afternoon's meetings. Please let me know if you want to discuss or whether you need more. Thanks, P.G.
>
> **From:** Beauvais, Joel
> **Sent:** Monday, June 13, 2016 5:10 PM
> **To:** Grevatt, Peter <Grevatt.Peter@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>
> **Subject:** FW: EPA proposes weakening radioactivity standard?
>
> As Peter and I discussed, it would be helpful for me to have response TPs on the precise rationale for selection of these particular levels (1-year risk levels equivalent to lifetime MCL?), and key points made by the advocates (e.g. these levels are higher than proposed during the Bush Administration, these levels are equivalent to 350 chest x-rays/year, etc.). Does the intermediate phase last beyond 1 year? I reread the rollout materials, and they don't expressly cover these points. Thanks.
>
> Joel
>
> **From:** John Rumpler [mailto:jrumpler@environmentamerica.org]
> **Sent:** Monday, June 13, 2016 3:29 PM
> **To:** Beauvais, Joel <Beauvais.Joel@epa.gov>
> **Subject:** FW: EPA proposes weakening radioactivity standard?
>
> Hi Joel,

As per my note to Peter below, we're concerned about this radioactivity standard.

John

John Rumpler, Senior Attorney

Environment America

294 Washington Street, Suite 500 Boston, MA 02108

(617) 747-4306 (o) (617) 997-8296 (c)

jrumpler@environmentamerica.org

follow me at @JohnRumpler

We're hiring a new clean water advocate in Washington, DC. Apply here:
http://jobs.environmentamerica.org/clean-water-advocate.html

From: John Rumpler [mailto:jrumpler@environmentamerica.org]
Sent: Thursday, June 09, 2016 12:19 PM
To: Grevatt.peter@Epa.gov
Subject: FW: EPA proposes weakening radioactivity standard?

Hi Peter,

I'm just seeing this, and needless to say, it raises questions and concerns to say the least. I am sure we will be getting questions about this – from the community, allies on the Hill, the media, etc. Feel free to call me at your convenience. Ex. 6 - Personal Privacy Ex. 6 - Personal Privacy (cell)

John

John Rumpler, Senior Attorney

Environment America

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jrumpler@environmentamerica.org

follow me at @JohnRumpler

EPA Proposal Allows Radiation Exposure in Drinking Water Equivalent to 250 Chest X-Rays a Year

Food & Water Watch | June 8, 2016 1:33 pm | Comments

The U.S. Environmental Protection Agency (EPA) quietly issued proposals Monday to allow radioactive contamination in drinking water at concentrations vastly greater than allowed under the Safe Drinking Water Act. The new guidance would permit radiation exposures equivalent to 250 chest X-rays a year. Environmental groups are calling the proposal “shocking” and “egregious.”

<image001.jpg>On Monday, the U.S. Environmental Protection Agency (EPA) quietly issued proposals to allow radioactive contamination in drinking water at concentrations vastly greater than allowed under the Safe Drinking Water Act. Photo credit: Shutterstock

The EPA proposed Protective Action Guides (PAGs) would allow the general population to drink water hundreds to thousands of times more radioactive than is now legal. For example, radioactive iodine-131 has a current limit of 3 pico-curies per liter (pCi/L), in water but the new guidance would allow 10,350 (pCi/L), 3,450 times higher. For strontium-90, which causes leukemia, the current limit is 8 pCi/L; the new proposed value is 7,400 pCi/L, a 925-fold increase.

"Clean water is essential for health," Dr. Catherine Thomasson, executive director of Physicians for Social Responsibility, said. "Just like lead, radiation when ingested in small amounts is very hazardous to our health. It is inconceivable that EPA could now quietly propose allowing enormous increases in radioactive contamination with no action to protect the public, even if concentrations are a thousand times higher than under the Safe Drinking Water Act."

The Bush Administration in its last days unsuccessfully tried to put forward similar proposals, which the incoming Obama Administration pulled back. Now, in the waning months of the Obama Administration, the EPA's radiation office is trying again.

"These levels are even higher than those proposed by the Bush Administration—really unprecedented and shocking," Diane D'Arrigo, Nuclear Information and Resource Service, said.

The Bush Administration proposal for strontium 90 was 6,650 pCi/L; the new proposal is 7,400 pCi/L. For iodine-131, the Bush proposal was 8,490 pCi/L; the new proposal is 10,350 pCi/L. For cesium-137, the proposal was for 13,600 pCi/L; Obama "beats" Bush with a value of 16,570 pCi/L.

All radionuclides can cause cancer and other health and reproductive problems; there is no completely safe level. Strontium causes bone cancer and leukemia. Babies, children and females are at even greater risk than adult males.

PAGs apply not just to emergencies such as "dirty bombs" and Fukushima-type nuclear power meltdowns but also to any radiological release for which a protective action may be considered—even a radiopharmaceutical transport spill. The proposed drinking water PAG would apply not to the immediate phase after a release, but rather to the intermediate phase, after the release has been stabilized and lasting up to several years thereafter.

Radiation doses (in rems) cannot be measured but are calculated based on some measurements and many assumptions. The current Safe Drinking Water Act limits are based on 4 millirems per year. The PAGs would allow 500 millirems per year for the general population. A single chest X-ray gives about 2 millirems. Because of the way EPA is changing the definition of dose, for many radionuclides, the allowable concentration would be thousands, tens of thousands and even millions of times higher than set under the Safe Drinking Water Act.

Internal EPA documents obtained under the Freedom of Information Act show that the EPA itself concluded that the proposed concentrations "would exceed MCLs [Maximum Contaminant Limits of the Safe Drinking Water Act] by a factor of 100, 1000 and in two instances, 7 million." The EPA internal analysis showed that for one radionuclide, "drinking a very small glass of water of approximately 4 ounces … would result in an exposure that corresponds to a lifetime of drinking … water … at the MCL level."

"All of this is extraordinary, since EPA has recently accepted the National Academy of Sciences' most current risk estimates for radiation, indicating radiation is considerably more dangerous per unit dose than previously believed," D'Arrigo said. "Pushing allowable concentrations of radioactivity in drinking water up orders of magnitude above the longstanding Safe Drinking Water Act levels goes in exactly the opposite direction than the official radiation risk estimates go.

"Under these proposals, people would be forced to get the radiation equivalent of a chest X-ray 5 days a week, 50 weeks a year, for up to several years, with no medical benefit or informed consent, just from drinking water. This is immoral."

The public has 45 days from when it is published in the Federal Register to comment to the EPA on the PAG-Protective Action Guides.

"These proposed changes are a particularly egregious gift to the energy industry, which would essentially be given a free pass whenever nuclear or fracking waste enters our water supply," Wenonah Hauter, executive director of Food & Water Watch and author of the new book, *Frackopoly*, said. "The EPA under President Obama has also whitewashed the impact of fracking on drinking water. This is more of the same when it comes to his EPA's pro-industry, hands-off regulation of toxic practices that can harm public health."

<PAG Manual Values for Other Media 6-13-16 clean.docx>

To: Christ, Lisa[Christ.Lisa@epa.gov]
Cc: Burneson, Eric[Burneson.Eric@epa.gov]; Greene, Ashley[Greene.Ashley@epa.gov]; Wadlington, Christina[Wadlington.Christina@epa.gov]
From: Grevatt, Peter
Sent: Mon 6/13/2016 9:30:44 PM
Subject: RE: PAG bullets/radiation exposure
PAG Manual Values for Other Media 6-13-16 PCG.docx

Thanks for the quick turnaround on this. Just one minor edit for clarity. Forwarded to Joel.

From: Christ, Lisa
Sent: Monday, June 13, 2016 1:43 PM
To: Grevatt, Peter <Grevatt.Peter@epa.gov>
Subject: PAG bullets/radiation exposure

Hi Peter-

Attached is a summary of EPA PAG values for other media, our method for deriving the 500 mrem/100 mrem PAG and information on everyday doses of radiation.

Let me know if you'd like additional information.

Lisa

PAG Manual Values for Other Media

Early Phase

Shelter in place = 1,000 to 5,000 mrem

Supplemental administration of prophylactic drugs KI = 5,000 mrem

Worker Exposure = 5,000 mrem

Intermediate Phase

Relocation = 2,000 mrem

Food Interdiction = 500 mrem

Drinking Water = 100 mrem (sensitive life-stages) / 500 mrem (general population)

Approach for Selecting the Drinking Water PAG

- The proposed drinking water PAG establishes levels at which alternative sources of drinking water should be considered by local emergency responders to reduce exposure to radiation in drinking water.
- The drinking water PAGs were based on limiting the projected dose to the public to risk levels comparable to risks within the range of risks for lifetime exposure to radionuclides in drinking water.
- Risks for sensitive populations and the general population for exposures considered under the PAG proposal generally fall within the 10-4 to 10-6 risk range for excess cancer cases. This is consistent with risk ranges used for the NPDWR for radionuclides. The variation is due to different nuclides.
- OGWDW evaluated the dose of radiation that would result in a similar excess cancer risk following one year of exposure during an emergency as that estimated for a life time of exposure at the MCL (i.e., 70 years). For the general population the corresponding dose was approximately 500 mrem/year, however for sensitive lifestages the dose was approximately 100 mrem/year.

Annual Radiation Dose by Normal Daily Activities

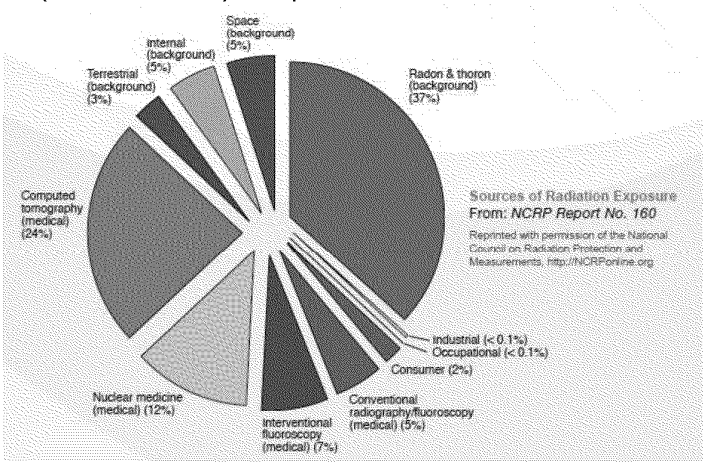
EPA OAR

Calculate Your Annual Radiation Dose
https://www.epa.gov/radiation/calculate-your-radiation-dose

- How many miles have you traveled by jet this year? (1 mrem per every 1000 miles)
- How many times did you go through a screening machine at the airport over the last year? (.003 average mrem each)
- Internal radiation from food and water (e.g., potassium) (40 mrem)
- Do you live in a stone, brick, or concrete building? (7 mrem)

All of us are exposed to radiation every day, from natural sources such as minerals in the ground,

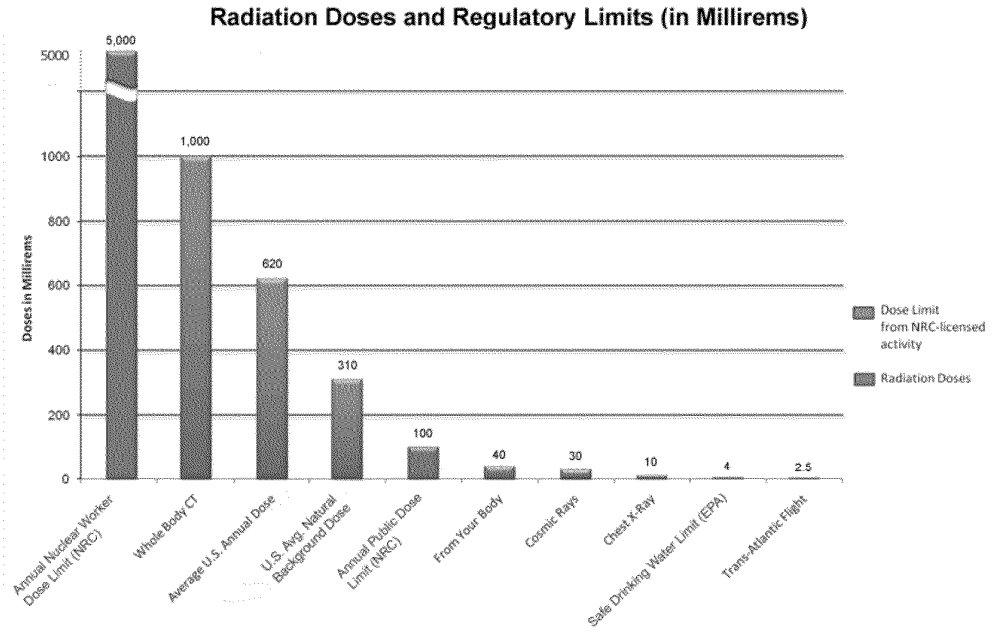
and man-made sources such as medical x-rays. According to the National Council on Radiation Protection and Measurements (NCRP), the average annual radiation dose per person in the U.S. is 620 millirem (6.2 millisieverts). The pie chart below shows the sources of this average



dose.
https://www.epa.gov/radiation/radiation-sources-and-doses

From the Nuclear Regulatory Commission

On average, Americans receive a radiation dose of about 0.62 rem (620 millirem) each year. Half of this dose comes from natural background radiation. Most of this background exposure comes from radon in the air, with smaller amounts from cosmic rays and the Earth itself. (The chart to the right shows these radiation doses in perspective.) The other half (0.31 rem or 310 mrem) comes from man-made sources of radiation, including medical, commercial, and industrial sources. In general, a yearly dose of 620 millirem from all radiation sources has not been shown to cause humans any harm.



Medical Procedure Doses

Procedure	Dose (mrem)
X-Rays-single exposure	
Pelvis	70
Abdomen	60
Chest	10
Dental	1.5
Mammogram (2 views)	72
Nuclear Medicine	400
CT	
Full body	1,000
Chest	700

To: Christ, Lisa[Christ.Lisa@epa.gov]
From: Hernandez-Quinones, Samuel
Sent: Mon 6/13/2016 4:53:29 PM
Subject: Re: factoids on the PAG for Joel
PAG Manual Values for Other Media 6-13-16.docx

Hi Lisa,

Please see updated file attached.

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Environmental Protection Agency
Office of Water
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Christ, Lisa
Sent: Friday, June 10, 2016 3:51 PM
To: Hernandez-Quinones, Samuel
Subject: factoids on the PAG for Joel

Hi Sam,

I spoke with Peter because Joel is asking him questions about the PAG. What would be helpful for Joel is a better understanding of:

- PAG values for other media
- The basis for the 100 mrem/500 mrem drinking water PAG i.e., risk based approach
- Radiation doses for everyday activities

I drafted the attached outline and filled in most of it. I need your help filling in the blanks. Peter asks that we have this for him noon Monday.

This is not something to work late on though.

Let me know if you have any questions.

Have a great weekend –

Lisa

PAG Manual Values for Other Media

Early Phase

Shelter in place = 1,000 to 5,000 mrem

Supplemental administration of prophylactic drugs KI = 5,000 mrem

Worker Exposure = 5,000 mrem

Intermediate Phase

Relocation = 2,000 mrem

Food Interdiction = 500 mrem

Drinking Water = 100 mrem (sensitive life-stages) / 500 mrem (general population)

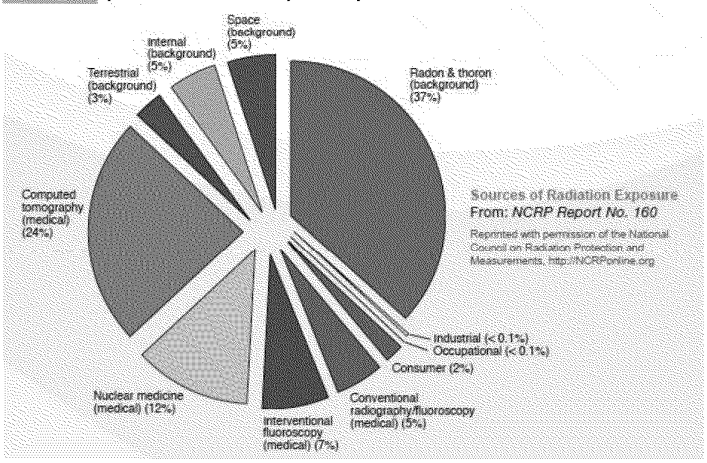
Approach for Selecting the Drinking Water PAG

- The proposed drinking water PAG establishes levels at which "do not drink orders" should be considered by local emergency responders to reduce exposure to radiation in drinking water.
- The drinking water PAGs were based on limiting the projected dose to the public to risks levels comparable and consistent with risks that could be within the range of risks for lifetime exposure to radionuclides in drinking water.
- Risks for sensitive populations and the general population for exposures considered under the PAG proposal generally fall within the 10-4 to 10-6 risk range for excess cancer cases.

Annual Radiation Dose by Normal Daily Activities

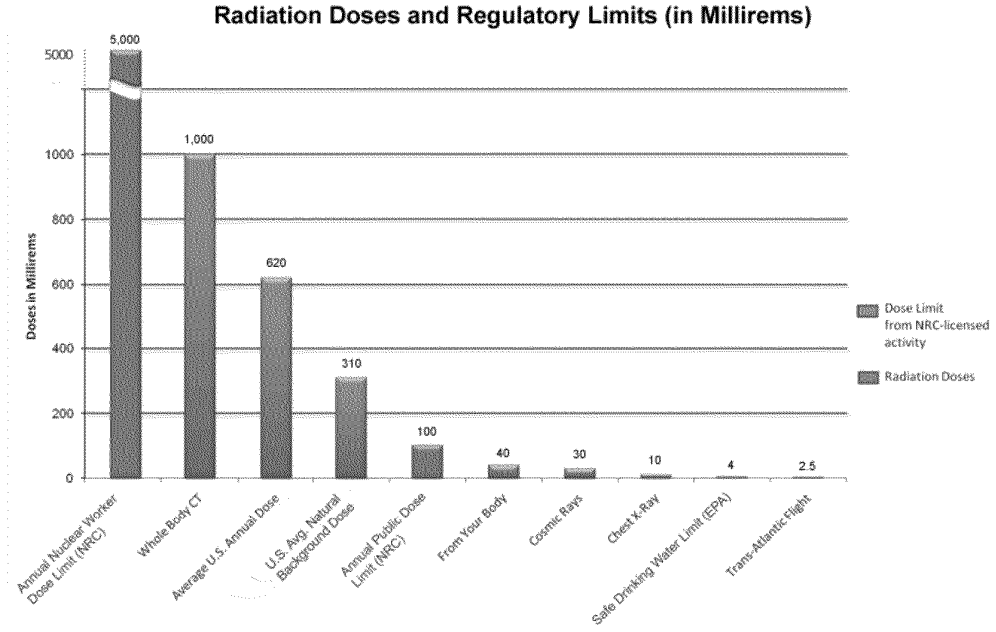
EPA OAR

All of us are exposed to radiation every day, from natural sources such as minerals in the ground, and man-made sources such as medical x-rays. According to the National Council on Radiation Protection and Measurements (NCRP), **the average annual radiation dose per person in the U.S. is 620 millirem** (6.2 millisieverts). The pie chart below shows the sources of this average dose.



From the Nuclear Regulatory Commission

On average, Americans receive a radiation dose of about 0.62 rem **(620 millirem)** each year. Half of this dose comes from natural background radiation. Most of this background exposure comes from radon in the air, with smaller amounts from cosmic rays and the Earth itself. (The chart to the right shows these radiation doses in perspective.) The other half (0.31 rem or 310 mrem) comes from man-made sources of radiation, including medical, commercial, and industrial sources. In general, a yearly dose of 620 millirem from all radiation sources has not been shown to cause humans any harm.



Medical Procedure Doses	
Procedure	**Dose (mrem)**
X-Rays-single exposure	
Pelvis	70
Abdomen	60
Chest	10
Dental	1.5
Mammogram (2 views)	72
Nuclear Medicine	400
CT	
Full body	1,000
Chest	700

To: liu@fien.com[liu@fien.com]; JLC@fien.com[JLC@fien.com]
Cc: Christ, Lisa[Christ.Lisa@epa.gov]
From: Jimmy Liu
Sent: Fri 6/10/2016 10:59:17 PM
Subject: Responding to Drinking Water Contamination due to a Radiological or Nuclear Incident - EPA is seeking comments on a proposed addition to the 2013 revised interim 'Protective Action Guides and Planning Guidance for Radiological Incidents' to provide ...

Responding to Drinking Water Contamination due to a Radiological or Nuclear Incident - EPA is seeking public comments on a proposed "... addition to the 2013 revised interim 'Protective Action Guides and Planning Guidance for Radiological Incidents' ... to provide guidance on drinking water ..." - EPA notes that "... a large scale radiation contamination incident could impact the United States, driving the need for a pre-established drinking water PAG. EPA is proposing a two-tiered intermediate phase drinking water PAG of 100 mrem projected dose in the first year for infants, children and pregnant or nursing women and 500 mrem projected dose in the first year for the general population ..." - PAGs are intended to "... 1) prevent short-term health effects, 2) balance protection with other important factors that may arise during an emergency (ensuring the actions result in more benefit than harm), and 3) reduce the potential for longer term health effects ..."

Document Title: The title of the June 10, 2016 EPA Federal Register Notice is "Notice of Availability: Draft Protective Action Guide (PAG) for Drinking Water After a Radiological Incident"

Organization: The June 10, 2016 Federal Register Notice was signed on June 3, 2016 by Joel Beauvais who is the Deputy Assistant Administrator of the EPA Office of Water

Source: June 10, 2016 EPA Federal Register Notice

Comments Due By: July 25, 2016

Web site: The June 10, 2016 EPA Federal Register Notice is posted at http://www.gpo.gov/fdsys/pkg/FR-2016-06-10/html/2016-13786.htm

The June 10, 2016 PA Draft Protective Action Guide (PAG) for Drinking Water is posted at
http://www.regulations.gov/#!documentDetail;D=EPA-HQ-OAR-2007-0268-0211

The March 2013 draft EPA interim Protective Action Guides and Planning Guidance for Radiological Incidents is posted at
http://www.epa.gov/sites/production/files/2015-06/documents/pag-manual-interim-public-comment-4-2-2013.pdf

Additional information about EPA Protective Action Guides is available at
http://www.epa.gov/radiation/protective-action-guides-pags

Contact: Questions may be directed to Lisa M. Christ who is with the Standards and Risk Management Division of the EPA Office of Ground Water and Drinking Water at 202 564 8354; fax: 202 564 3758; e-mail: Christ.Lisa@EPA.gov

Summary: The following information is taken from the June 10, 2016 EPA Federal Register Notice:

C. What is the PAG Manual: Protective Action Guides and Planning Guidance for Radiological Incidents?

In 2013, EPA revised the PAG Manual to provide federal, state and local emergency management officials with guidance for responding to radiological emergencies (78 FR 22257, April 15, 2013). See the 2013 PAG Manual at http://www.epa.gov/radiation/protective-action-guides-pags .

A protective action guide (PAG) is the projected dose to an individual from a release of radioactive material at which a specific protective action to reduce or avoid that dose is recommended. Emergency management officials use PAGs for making decisions regarding actions to protect the public from exposure to radiation during an emergency. Such actions include evacuation, shelter-in-place, temporary relocation, water and food restrictions.

The PAGs are based on the following essential principles, which also apply to the selection of any protective action during an incident:

* Prevent acute effects.
* Balance protection with other important factors and ensure that actions result in more benefit than harm.
* Reduce risk of chronic effects.

The PAG Manual is not a legally binding regulation or standard and does not supersede any environmental laws; PAGs are not intended to define ``safe'' or ``unsafe'' levels of exposure or contamination. As indicated by the use of non-mandatory language such as ``may,'' ``should'' and ``can,'' the Manual only provides recommendations and does not confer any legal rights or impose any legally binding requirements upon any member of the public, states or any federal agency. Rather, the PAG Manual provides projected radiation dose levels at which specific actions are recommended in order to reduce or avoid that dose. The 2013 revised interim PAG Manual is designed to provide flexibility to be more or less restrictive as deemed appropriate by decision makers based on the unique characteristics of the incident and the local situation.

D. What additional guidance is being proposed for the PAG Manual?

The draft drinking water protective action guidance was developed by a multi-agency PAG Subcommittee of the Federal Radiological Preparedness Coordinating Committee

and is published by the EPA with concurrence from the Department of Energy, the Department of Defense, the Department of Homeland Security (DHS), including the Federal Emergency Management Agency, the Nuclear Regulatory Commission, the Department of Health and Human Services, including both the Centers for Disease Control and Prevention and the Food and Drug Administration (FDA), the U.S. Department of Agriculture and the Department of Labor.

A large scale radiation contamination incident could impact the United States, driving the need for a pre-established drinking water PAG. EPA is proposing a two-tiered intermediate phase drinking water PAG of 100 mrem projected dose in the first year for infants, children and pregnant or nursing women and 500 mrem projected dose in the first year for the general population. The proposed PAG is designed to work in concert with the other Protective Action Guides currently in place for other media in the intermediate phase (i.e., the Food and Drug Administration's 500 mrem PAG for ingestion of food) and provides an additional level of protection for the most sensitive life stages. Authorities have flexibility on how to apply the PAG. In some cases they may find it prudent to use a single PAG (e.g., 100 mrem) as a target for the whole population, while in other circumstances, authorities may find that it makes sense to use both targets simultaneously. For example, emergency managers can use a two-tiered approach to focus on protecting the most sensitive population with limited, alternate water resources. Because the water and food PAGs are designed to be used in concert, the appropriate protective actions will be influenced by the exposure scenario and factors that influence the viability of alternative approaches to reducing that dose.

This proposed, additional draft guidance recommends protective actions when drinking water may be impacted by a radiological or nuclear incident. The two-tier approach seeks to balance the goal of keeping radiation doses as low as possible with the practical and logistical challenges of providing alternative drinking water during the response to a disaster. EPA has included examples of estimated costs for selected drinking water protective actions in the Docket, ID No. EPA-HQ-OAR-2007-0268. In developing the drinking water PAG, the Agency considered potential cumulative exposure from a radiation incident. Ultimately, a PAG does not represent an ``acceptable" routine exposure; a PAG is a dose at which protective action is advised in order to reduce or avoid that dose. Every PAG is developed with the same three principles: prevent acute effects, balance protection with other important factors and ensure that actions result in more benefit than harm, and reduce risk of chronic effects. Emergency management officials should consider all exposure routes when making protective action decisions in an emergency.

Under the Safe Drinking Water Act (SDWA), the Agency has established maximum contaminant levels (MCLs) for radiological contaminants in drinking water. The National Primary Drinking Water Regulations (NPDWR) for radionuclides are based on lifetime exposure criteria and assume 70 years of continued exposure to contaminants in drinking water. While the SDWA framework is appropriate for day-to-day normal operations, it may not provide the necessary tools to assist emergency responders with determining the need for an immediate protective action. EPA expects that any drinking water system adversely impacted during a radiation contamination incident will take

action to return to compliance with MCLs as soon as practicable.

###########

Go to the EPA Federal Register Notice for additional information and details.

##########

This article (#37308) was distributed by e-mail on June 10, 2016 to those whose names are on the FIEN, LLC Subject Matter Distribution Lists for Bioterrorism; Clean Water - Other; Disasters; Drinking Water; Food Defense; Food Safety; Hazardous Substances Management; Local Government; Medical Issues; Risk Assessment and Communication; Water Quantity

-end-

The above information was sent to you by Jimmy Liu of the Food Industry Environmental Network, LLC --- http://www.fien.com --- mobile: 240 476 5958 --- e-mail: liu@fien.com

* Messages prefaced with [SFM] are FIEN Shortened Messages which are distinguished from FIEN Traditional Messages as described at http://www.fien.com/SFM.php

* The Searchable Index of Previously Distributed FIEN Messages is available at http://www.fien.com/login/logins.php?RELOAD=/search_article.php

* Please take the time to respond to our Feedback Survey at http://www.fien.com/survey.php

To: Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]; Christ, Lisa[Christ.Lisa@epa.gov]; Wadlington, Christina[Wadlington.Christina@epa.gov]; Ellis, Jerry[Ellis.Jerry@epa.gov]; DeCair, Sara[DeCair.Sara@epa.gov]
Cc: Veal, Lee[Veal.Lee@epa.gov]; White, Rick[White.Rick@epa.gov]
From: Nesky, Anthony
Sent: Fri 6/10/2016 12:39:40 AM
Subject: Request for Comment Period Extension received via Radiation Protection "Contact Us" webpage

The Radiation Protection "Contact Us" webpage received the following request for an extension of the comment period. Can you accept it, or does the person need to submit it elsewhere?

Tony Nesky
Center for Radiation Information and Outreach
Tel: 202-343-9597
nesky.tony@epa.gov

-----Original Message-----
From: Radiation Questions
Sent: Thursday, June 09, 2016 8:37 PM
To: Nesky, Anthony <Nesky.Tony@epa.gov>
Subject: Request for Comment Period Extension received via Radiation Protection "Contact Us" webpage

-----Original Message-----
From: drupal_admin@epa.gov [mailto:drupal_admin@epa.gov]
Sent: Tuesday, June 07, 2016 9:05 PM
To: Radiation Questions <Radiation.Questions@epa.gov>
Subject: Contact Us - Radiation Protection

Submitted on 06/07/2016 9:05PM
Submitted values are:

Name: Marylia Kelley
Email: marylia@trivalleycares.org
Comment or Question: On what date are you planning to post the Federal Register notice re: the PAGs for radioactivity in water? For how many days after are you planning to accept public comments? If the answer is 45-days, please accept this note as a formal request from Tri-Valley CAREs in Livermore, CA for 45 days of additional time - i.e., for a total comment period of 90 days. Thank you in advance for your consideration.

To: Christ, Lisa[Christ.Lisa@epa.gov]
From: Diane D'Arrigo
Sent: Thur 6/9/2016 8:01:09 PM
Subject: commenting on PAGs

Dear Lisa Christ

I see that you are the contact on the prepublication in the federal register for comments on Draft Protective Action Guide (PAG) for Drinking Water after a Radiological Incident.

Could you please provide a direct email address for public comments?

Thank you so much

Diane D'Arrigo

dianed@nirs.org

301 270 6477 x15

Submitted via www.whitehouse.gov/contact
Case Number: 20160607-07989353
IP Address:

From: **Mr. Greg J. Wingard**

Submitted: 6/7/2016 7:17 PM EDT

Email: gwingard@earthlink.net

Phone: (206) 849-5927

Address: 24253 180th Avenue, S.E., Covington, Washington 98042 (Valid)

Subject: **Environmental Protection Agency**

Message: President Obama:

I was shocked and appalled to see the Environmental Protection Agency (EPA) revised Protection Action Guides that would allow the public to be opposed to a huge increase in exposure from radiation in drinking water.

As an example it would allow exposure to radioactive iodine-131 from 3 pico-curies per liter in water to 10, 350 pCi/L, the limit for strontium-90 would be increased by over 900 times!

All of this is in direct opposition to the best available science, which say there is no safe threshold for radiation exposure, and the dosages of what has been designated as acceptable risk levels have been steadily dropping.

The only reason for these changes, which were also attempted in the waning hours of the Bush administration is as a sop to the nuclear power industry whose aging reactors are releasing increasing quantities of radioactive isotopes to air and water.

Please instruct EPA to pull these alarming changes to the Protection Action Guides, as it would essentially turn them into the Radioactive Dosage Permission Guides.

To: Christ, Lisa[Christ.Lisa@epa.gov]; Flaharty, Stephanie[Flaharty.Stephanie@epa.gov]
Cc: Arrigoni, Holly[Arrigoni.Holly@epa.gov]
From: Evalenko, Sandy
Sent: Thur 6/9/2016 12:26:00 PM
Subject: RE: Do we have an end date for final PAGs?

Holly and I were more interested in drinking water's part. I didn't want it to fall off a short list that Holly provided to Joel for planning purposes for activities to completed by the end of this year.

Sandy

-----Original Message-----
From: Christ, Lisa
Sent: Thursday, June 09, 2016 8:07 AM
To: Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>; Evalenko, Sandy <Evalenko.Sandy@epa.gov>
Cc: Arrigoni, Holly <Arrigoni.Holly@epa.gov>
Subject: RE: Do we have an end date for final PAGs?

Are you asking about the full PAG manual which will include the drinking water PAG?

-----Original Message-----
From: Flaharty, Stephanie
Sent: Wednesday, June 08, 2016 2:48 PM
To: Evalenko, Sandy <Evalenko.Sandy@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Arrigoni, Holly <Arrigoni.Holly@epa.gov>
Subject: RE: Do we have an end date for final PAGs?

Planned by year-end according to staff.

-----Original Message-----
From: Evalenko, Sandy
Sent: Wednesday, June 08, 2016 2:40 PM
To: Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>
Cc: Arrigoni, Holly <Arrigoni.Holly@epa.gov>
Subject: Re: Do we have an end date for final PAGs?

By Jan 2017?

nt from my iPhone

To: Christ, Lisa[Christ.Lisa@epa.gov]; Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]; Ellis, Jerry[Ellis.Jerry@epa.gov]; Wadlington, Christina[Wadlington.Christina@epa.gov]
From: Veal, Lee
Sent: Thur 6/9/2016 11:54:29 AM
Subject: FW: Handling Press Response Regarding New Water PAG

Good morning,

Circling back to you on the morning email traffic. Region 6 is the Agency's sublead for Radiation (Region 8 is the lead for air, and Region 6 handles ORIA if you will).

George B communicates with the 10 Regions on our behalf, and he is reminding them of OPA/OW channels for drinking water PAG.

Just an FYI

Lee

Lee Ann B. Veal

Acting Deputy Director, Radiation Protection Division

Office of Radiation and Indoor Air

Office: 202-343-9448; Cell: 202-617-4322

www.epa.gov/radiation

From: Brozowski, George
Sent: Thursday, June 09, 2016 7:00 AM
To: BANDROWSKI, MIKE <Bandrowski.Mike@epa.gov>; Berry, Mark <Berry.Mark@epa.gov>; Bhesania, Amy <Bhesania.Amy@epa.gov>; Carroll, Craig <Carroll.Craig@epa.gov>; Cherepy, Andrea <Cherepy.Andrea@epa.gov>; Clark, Mike S. <Clark.Michael@epa.gov>; Davis, Amber <Davis.Amber@epa.gov>; Dossett, Donald <Dossett.Donald@epa.gov>; Durkin, Kim <Durkin.Kim@epa.gov>; Edwards, Jonathan <Edwards.Jonathan@epa.gov>; Febbo, carol <febbo.carol@epa.gov>; Ferguson, Rafaela <Ferguson.Rafaela@epa.gov>; Freeman, Alison <Freeman.Alison@epa.gov>; Giardina, Paul <Giardina.Paul@epa.gov>; Griggs, John <Griggs.John@epa.gov>; Honnellio, Anthony <Honnellio.Anthony@epa.gov>; Jackson, Scott <Jackson.Scott@epa.gov>; Jalbert, Philip

<Jalbert.Philip@epa.gov>; Jay, Michael <Jay.Michael@epa.gov>; Jencius, Michele <jencius.michele@epa.gov>; Kolb, Laura <Kolb.Laura@epa.gov>; Kral, Katrin <Kral.Katrin@epa.gov>; McDonnell, Ida <McDonnell.Ida@epa.gov>; McTigue, Erin <McTigue.Erin@epa.gov>; Peake, Tom <Peake.Tom@epa.gov>; Rowson, David <Rowson.David@epa.gov>; Schultheisz, Daniel <Schultheisz.Daniel@epa.gov>; Shimek, Susie <Shimek.Susie@epa.gov>; Smith, Alisa <Smith.Alisa@epa.gov>; Snowbarger, Robert <Snowbarger.Robert@epa.gov>; Stafford, Andrea <Stafford.Andrea@epa.gov>; Vargo, Steve <Vargo.Steve@epa.gov>; Veal, Lee <Veal.Lee@epa.gov>; Wilds, Edward <Wilds.Edward@epa.gov>; Wilson, Wenona <Wilson.Wenona@epa.gov>; Worley, Gregg <Worley.Gregg@epa.gov>; Aquino, Marcos <Aquino.Marcos@epa.gov>; Barnette, Jack <Barnette.Jack@epa.gov>; Brozowski, George <brozowski.george@epa.gov>; Cooper, Artra <Cooper.Artra@epa.gov>; Debonis, Michael <Debonis.Michael@epa.gov>; DeCair, Sara <DeCair.Sara@epa.gov>; Freed, Rachel <freed.rachel@epa.gov>; Generette, Lloyd <Generette.Lloyd@epa.gov>; Hooper, Charles A. <Hooper.CharlesA@epa.gov>; Johnson, Jeremy <Johnson.Jeremy@epa.gov>; Koehler, Larainne <Koehler.Larainne@epa.gov>; Mosser, Jennifer <Mosser.Jennifer@epa.gov>; Murphy, Michael <murphy.michael@epa.gov>; Poppell, Sam W. <Poppell.Sam@epa.gov>; Povetko, Oleg <Povetko.Oleg@epa.gov>; Richards, Jon M. <Richards.Jon@epa.gov>; Schulingkamp, Cristina <schulingkamp.cristina@epa.gov>; Sells, Mark D. <Sells.Mark@epa.gov>; Zhen, Davis <Zhen.Davis@epa.gov>
Cc: Durant, Jennah <Durant.Jennah@epa.gov>; Hubbard, Joseph <Hubbard.Joseph@epa.gov>; Nesky, Anthony <Nesky.Tony@epa.gov>; Shogren, Angela <Shogren.Angela@epa.gov>
Subject: Handling Press Response Regarding New Water PAG

Good morning! The Office of Water is the lead office for the new water PAGs. Reporters should go through your regional press office or HQ Press Office and they can arrange a discussion with a senior drinking water official.

The HQ Press Office Contact for drinking water issues is Julia Valentine:

Desk: (202) 564-2663

Cell: (202) 740-1336

valentine.julia@epa.gov

George P. Brozowski

Regional Health Physicist/Radon Coordinator

US EPA – R6

1445 Ross Avenue

Mail Stop - 6MM-XU

Dallas, TX 75202

214-665-8541 o

214-755-1530 c

To: Greene, Ashley[Greene.Ashley@epa.gov]
Cc: Burneson, Eric[Burneson.Eric@epa.gov]; Schuck, Tracey[Schuck.Tracey@epa.gov]; Bissonette, Eric[Bissonette.Eric@epa.gov]; Carroll, Gregory[Carroll.Gregory@epa.gov]; Christ, Lisa[Christ.Lisa@epa.gov]; Hautman, Dan[Hautman.Dan@epa.gov]; Huff, Lisa[Huff.Lisa@epa.gov]; Rodgers-Jenkins, Crystal[Rodgers-Jenkins.Crystal@epa.gov]; Albert, Ryan[Albert.Ryan@epa.gov]
From: Oshida, Phil
Sent: Thur 6/9/2016 11:53:31 AM
Subject: SRMD Biweekly Report, 6-9-16

SRMD Biweekly Report

June 9, 2016

-

Rules/Analytic Progress

-

Third Six-Year Review (SYR 3) of National Primary Drinking Water Regulations (NPDWRs): On June 3, SRMD staff briefed the Deputy Assistant Administrator Beauvais (DAA) on SYR 3 Workgroup activities and review options. Workgroup members from various Offices and Regions, including OCHP, OGC, OP, R3, R5, and R9, participated in the briefing. DAA Beauvais requested that the group further review options for an NPDWR mentioned during briefing. The next steps are to schedule a follow-up meeting with the DAA and prepare to brief Administrator McCarthy. (Kesha Forrest, 564-3632)

-

Perchlorate Peer Review:

A *Federal Register* notice was published on June 3 requesting additional nominations to expand the range of expertise available for a perchlorate peer review panel. The peer review panel will be asked to address both the adequacy of a Biologically Based Dose Response (BBDR) model for perchlorate as well as the approach for deriving an MCLG from the model output. The MCLG will be used to develop a national primary drinking water regulation for perchlorate. The notice includes a 30-day period to receive nominations. (Russ Perkinson, 202-564-4901).

Lead and Copper Rule (LCR): The LCR Long-term Revisions Workgroup held a second meeting on the topic of mandatory lead service line (LSL) replacement on June 2, 2016. Overall, the workgroup views a mandatory program as necessary, however there are many implementation concerns to address. The amount of time systems would need to conduct an inventory of LSLs in their distribution was a major area

discussed. In addition, the workgroup discussed options for determining the number of lines that systems would be required to replace within a year. The workgroup was updated about plans for early guidance with the Administrator (Jerry Ellis, 202-564-2766).

Stakeholder Support

Radiation Protective Action Guides/Drinking Water: On June 6, EPA announced its proposed Drinking Water Protective Action Guide for Radiologic Incidents. EPA is proposing non-regulatory guidance that emergency responders can use to protect citizens from the harmful effects of radiation in drinking water following a radiation contamination incident. EPA will be seeking public comment on the proposal for 45 days following publication in the *Federal Register*. (Sam Hernandez, 202-564-1735).

Optimization Program/Distribution System Optimization Activities in Flint, MI: During the week of May 16, the Optimization Team met with the City of Flint Water Department to discuss distribution system flushing and maintenance of appropriate disinfectant residuals. The team provided support on the operation of the automated hydrant flushing program, trained laboratory staff on how to conduct a chlorine decay study, and assessed the feasibility of conducting water quality sampling studies from their storage reservoirs. Based on the design of their storage facilities, sample locations for each reservoir will be limited. The Optimization Team will continue to support Flint by assisting with the collection of those samples and providing assistance on their automated flushing program and distribution system optimization activities. (Matthew Alexander, 513-569-7380)

To: Christ, Lisa[Christ.Lisa@epa.gov]; Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]; Ellis, Jerry[Ellis.Jerry@epa.gov]
Cc: DeCair, Sara[DeCair.Sara@epa.gov]
From: Veal, Lee
Sent: Thur 6/9/2016 11:49:48 AM
Subject: FW: Publication of EPA Drinking Water Protective Action Guide (PAG).

FYI

This is the FRPCC distribution. FRPCC = Federal Radiological Preparedness Coordinating Commission, led by FEMA with the federal family of agencies represented.

http://www.fema.gov/federal-radiological-preparedness-coordinating-committee

Lee Ann B. Veal

Acting Deputy Director, Radiation Protection Division

Office of Radiation and Indoor Air

Office: 202-343-9448; Cell: 202-617-4322

www.epa.gov/radiation

From: Hale, Olin [mailto:olin.hale@fema.dhs.gov]
Sent: Thursday, June 09, 2016 7:31 AM
To: Hutter, Adam <adam.hutter@HQ.DHS.GOV>; Remick, Alan <alan.remick@nnsa.doe.gov>; Scott, Andrew <andrew.scott@hq.dhs.gov>; Armin Ansari <asa4@cdc.gov>; Barbara Stunder <Barbara.Stunder@noaa.gov>; Ben Cacioppo <Ben.Cacioppo@dtra.mil>; Stevenson, Benjamin <Benjamin.Stevenson@hq.dhs.gov>; Bernard Bogdan <bernard.bogdan@ic.fbi.gov>; Webb, Bill <Bill.Webb@fema.dhs.gov>; Blizzard, Jeffrey <jeffrey.blizzard@fema.dhs.gov>; Blumenthal, Daniel <Daniel.Blumenthal@nnsa.doe.gov>; Bruce Young <Bruce.Young@med.va.gov>; byw3@cdc.gov; Gorman, Chad <Chad.Gorman@fema.dhs.gov>; Wood, Chad <chad.wood@HQ.DHS.GOV>; Christine Martin <MartinCR@state.gov>; Gregg, Chuck <Chuck.Gregg@fema.dhs.gov>; Burnside, Conrad <Conrad.Burnside@fema.dhs.gov>; Crawford, Sean <Sean.Crawford@fema.dhs.gov>; Cullen, William R <William.Cullen@fema.dhs.gov>; Dean McCauley <Dean.McCauley@gsa.gov>; Dennis

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Jackson, Liz <Liz.Jackson@fema.dhs.gov>; Jason.kozal@nrc.gov; Snead, Kathryn <Snead.Kathryn@epa.gov>; Ken Lauziere <Ken.Lauziere@cabezon.com>; Kenneth Inn <kenneth.inn@nist.gov>; Laurence Broun <laurence.broun@ios.doi.gov>; Lisa Karam <lisa.karam@nist.gov>; Nanko, Lisa <Nanko.Lisa@epa.gov>; Mark Russo <mark.russo@fda.hhs.gov>; Michael Podguski <mpodguski@hwcinc.com>; Ward, Paul <Paul.Ward@fema.dhs.gov>; Perry, April <April.Perry@fema.dhs.gov>; Pesapane, Robert <Robert.Pesapane@fema.dhs.gov>; Ricardo Reyes <ricardo.a.reyes@us.army.mil>; Collins, Richard <Richard.Collins@fema.dhs.gov>; Robert Prins <robert.prins@dtra.mil>; Sabata, Andrew <andrew.sabata@fema.dhs.gov>; Stewart-Smith, Mart A (Stewart-SmithMA@state.gov) <Stewart-SmithMA@state.gov>; Tagliento, Marc <Marc.Tagliento@fema.dhs.gov>; Tony Nesk <nesk.tony@epa.gov>
Cc: Rogers, James D <James.Rogers3@fema.dhs.gov>; Blizzard, Jeffrey <jeffrey.blizzard@fema.dhs.gov>
Subject: Publication of EPA Drinking Water Protective Action Guide (PAG).

Good Morning FRPCC Colleagues,

The Environmental Protection Agency would like to share with the FRPCC news about the upcoming Federal Register publication of a Drinking Water PAG proposal. EPA expects a Federal Register publication in the next few days.

Pre-publication versions of the "Draft Protective Guide (PAG) for Drinking Water" and the " Notice of Availability" are available on the EPA website now:

https://www.epa.gov/radiation/protective-action-guides-pags

EPA will be seeking comment on the Proposed Drinking Water Protective Action Guide (PAG) and Planning Guidance For Radiological Incidents. Public comments will be due 45 days after publication in the Federal Register.

Once Notice of Availability is published in the Federal Register, pre-publication versions will be replaced with links to the Federal Register and Docket.

Please let me know if I may provide any additional information.

Very Best Regards,

Olin

Olin T. Hale, PPS

FRPCC Secretariat

Professional Services and Integration
Technological Hazards Division
Federal Emergency Management Agency
U.S. Department of Homeland Security
202.341.8643

email: olin.hale@fema.dhs.gov

To: Oshida, Phil[Oshida.Phil@epa.gov]
Cc: Christ, Lisa[Christ.Lisa@epa.gov]; Schuck, Tracey[Schuck.Tracey@epa.gov]
From: Huff, Lisa
Sent: Wed 6/8/2016 9:38:30 PM
Subject: FW: SRMD Biweekly Report

Phil,

Here are our bullets for this week –

TAB bullets for 6/8/16

-

Perchlorate Peer Review

A notice was published on June 3 in the Federal Register to request additional nominations to expand the range of expertise available for a perchlorate peer review panel. A combined peer review panel will be asked to address both the adequacy of a Biologically Based Dose Response (BBDR) model for perchlorate as well as review an approach for deriving an MCLG from the model output. The MCLG will be used to develop a national primary drinking water regulation for perchlorate. The notice includes a 30-day period to request nominations. (Russ Perkinson 564-4901).

Radiation Protective Action Guides – Drinking Water

On Monday, June 6 EPA announced its proposed Drinking Water Protective Action Guide for Radiologic Incidents. EPA is proposing non-regulatory guidance that emergency responders can use to protect citizens from the harmful effects of radiation in drinking water following a radiation contamination incident. EPA will be seeking public comment on the proposal for 45 days following publication in the Federal Register. (Sam Hernandez 202-564-1735).

Lead and Copper Rule (LCR)

The LCR Long-term Revisions Workgroup held a second meeting on the topic of mandatory lead service line (LSL) replacement on June 2, 2016. Overall the workgroup views a mandatory program as necessary, however there are many implementation concerns to address. The amount of time systems would need to conduct an inventory of LSLs in their distribution was a major area discussed. In addition, the workgroup discussed at length, options for determining the number of lines that systems would be required to replace within a year. The workgroup was

updated about plans for early guidance with the Administrator (Jerry Ellis, 202-564-2766).

Third Six-Year Review (SYR 3) of National Primary Drinking Water Regulations (NPDWRs): On June 3, SRMD staff briefed the Deputy Assistant Administrator (DAA), Joel Beauvais, on SYR 3 Agency Workgroup activities and review options. Workgroup members participated in the briefing from various offices and regions including OCHP, OGC, OP, R3, R5, and R9. DAA Beauvais requested that the group take a second look at alternative review options for fluoride that were mentioned during briefing. The next steps are to schedule a follow-up meeting with DAA Beauvais and prepare for a briefing with Administrator McCarthy. (Kesha Forrest, 564-3632; Richard Weisman, 564-2822)

Lisa Foersom Huff

Associate Branch Chief

Targeting and Analysis Branch

Standards and Risk Management Division

Office of Groundwater and Drinking Water

U.S. EPA

EPA East Bldg. Rm. 2331 C

202-566-0787

From: Schuck, Tracey
Sent: Wednesday, June 08, 2016 9:50 AM
To: Rodgers-Jenkins, Crystal <Rodgers-Jenkins.Crystal@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Albert, Ryan <Albert.Ryan@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>; Carroll, Gregory <Carroll.Gregory@epa.gov>; Hautman, Dan <Hautman.Dan@epa.gov>
Subject: SRMD Biweekly Report

Please provide Phil with your updates by COB today, Wednesday June 8th. thanks

To: White, Rick[White.Rick@epa.gov]; Wadlington, Christina[Wadlington.Christina@epa.gov]; Christ, Lisa[Christ.Lisa@epa.gov]; Ellis, Jerry[Ellis.Jerry@epa.gov]; Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]; Millett, John[Millett.John@epa.gov]; Canino, Richard[Canino.Richard@epa.gov]
Cc: Veal, Lee[Veal.Lee@epa.gov]; Perrin, Alan[Perrin.Alan@epa.gov]
From: Nesky, Anthony
Sent: Wed 6/8/2016 1:32:05 PM
Subject: FYI: NIRS Press Release on Drinking Water PAG

---------- Forwarded message ----------
EPA PROPOSES SHOCKING THOUSAND-FOLD INCREASE IN RADIOACTIVITY ALLOWED IN DRINKING WATER

by Christina MacPherson

From Diane D'Arrigo at NIRS (Nuclear Information and Resource Service) Note that the public has 45 days from when it is published in the Federal Register to comment to the EPA on the PAG-Protective Action Guides. I'll post an alert tomorrow. This is a media release below.
Feel free to send it to interested reporters. Direct them to the press contacts listed at the top of the release. Thanks! - Kay C.

Proposal Would Permit Radiation Exposures Equivalent to 250 Chest X-Rays a Year

Washington, D.C. – Yesterday, the U.S. EPA quietly issued proposals to allow radioactive contamination in drinking water at concentrations vastly greater than allowed under the Safe Drinking Water Act. The new guidance would permit radiation exposures equivalent to 250 chest X-rays a year. Today, environmental groups called the proposal “shocking” and “egregious.”

The EPA proposed Protective Action Guides (PAGs) would allow the general population to drink water hundreds to thousands of times more radioactive than is now legal. For example, radioactive iodine-131 has a current limit of 3 pico-curies per liter (pCi/L), in water but the new guidance would allow 10,350 (pCi/L), 3,450 times higher. For strontium-90, which causes leukemia, the current limit is 8 pCi/L; the new proposed value is 7,400 pCi/L, a 925-fold increase.

“Clean Water is essential for health. Just like lead, radiation when ingested in small amounts is very hazardous to our health. It is inconceivable that EPA could now quietly propose allowing enormous increases in radioactive contamination with no action to protect the public, even if concentrations are a thousand times higher than under the Safe Drinking Water Act,” said Dr. Catherine Thomasson, Executive Director of Physicians for Social Responsibility.

The Bush Administration in its last days unsuccessfully tried to put forward similar proposals, which the incoming Obama Administration pulled back. Now, in the waning months of the Obama Administration, EPA's radiation office is trying again.

"These levels are even higher than those proposed by the Bush Administration—really unprecedented and shocking," said Diane D'Arrigo, Nuclear Information and Resource Service. Read more of this post

http://nuclear-news.net/2016/06/08/epa-proposes-shocking-thousand-fold-increase-in-radioactivity-allowed-in-drinking-water/

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For information on how to subscribe or unsubscribe and other settings visit: http://health.phys.iit.edu

To: Grevatt, Peter[Grevatt.Peter@epa.gov]; Osegueda, Carlos[Osegueda.Carlos@epa.gov]; Burneson, Eric[Burneson.Eric@epa.gov]; Oshida, Phil[Oshida.Phil@epa.gov]; Christ, Lisa[Christ.Lisa@epa.gov]; Huff, Lisa[Huff.Lisa@epa.gov]; Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]; Greene, Ashley[Greene.Ashley@epa.gov]; Harris, Adrienne[Harris.Adrienne@epa.gov]; Wadlington, Christina[Wadlington.Christina@epa.gov]
From: Flaharty, Stephanie
Sent: Wed 6/8/2016 9:56:46 AM
Subject: BNA & Inside EPA - PAGs

EPA Issues Draft Radiological Guide for Drinking Water

BNA Snapshot

Protective Action Guide on Drinking Water

Key Development: Emergency responders should restrict the general population's consumption of drinking water after a radiological incident if the water has a radionuclides concentration above 500 millirem for one year.

Potential Impact: The draft guide is intended to prevent and reduce acute and chronic health impacts, and help local decision makers in the case of radioactive emergency.

Reactions: Environmentalists attacked the draft for allowing too high levels of exposure through water, while rural water utilities praised EPA's transparent and non-regulatory approach.

What's Next: The EPA is sending the notice to the Federal Register for a 45-day comment period.

June 7 — Emergency responders should restrict the general population's consumption of drinking water after a radiological incident occurs if the water has a radionuclides concentration of at least 500 millirem projected dose in the first year, the Environmental Protection Agency said in recently released draft guidance developed in response to Japan's Fukushima disaster.

Anyone younger than 15, or pregnant or nursing should abide by a more-stringent 100 millirem projected dose in the first year until the incident is under control, the EPA said in its June 6 draft. Environmentalists attacked the draft June 7 for allowing levels of exposure through water that are too high, while rural water utilities praised EPA's transparent and non-regulatory approach.

“A PAG [protective action guide] is intended as a point of reference to aid emergency

response managers in their decision-making," the draft guide that is intended to prevent acute and reduce risk of effects such as lifetime risk of cancer said. "After a particular situation stabilizes and becomes more clearly defined, local authorities may wish to modify the PAG level they consider to be appropriate in order to implement longer-term dose reduction strategies."

The draft guide, which was issued following a 2013 EPA request for comment, could be used and considered with radiological incidents guides for other media such as the Food and Drug Administration's guide for food ingestion. The draft offers non-binding recommendations that authorities could apply as needed.

If made final, the draft guidance would have a one-year implementation time frame. The EPA is sending a notice on the draft guide to the Federal Register for a 45-day comment period.

Is It Appropriate?

Environmentalists took aim at the EPA for establishing what some called egregiously high drinking water guide levels. Several environmentalists had urged the EPA in 2013 to establish guide levels only in line with existing maximum contaminant levels under the Safe Drinking Water Act.

"Given this monstrous proposal, it is unclear what lessons EPA learned from the contaminated water calamity of Flint, Michigan," Jeff Ruch, executive director for Public Employees for Environmental Responsibility, said in a statement. "It is unfathomable that a public health agency would prescribe subjecting people to radioactive concentrations a thousand times above Safe Drinking Water Act limits as a 'protective' measure."

The maximum contaminant levels were intended for limiting "everyday exposure" and assume 70 years of continuous exposure, while this guide would be in place only for emergencies, the EPA said. The entity responsible for any radiation incident-impacted drinking water system would be expected to "return to compliance" with maximum contaminant levels "by the earliest feasible time," the EPA's draft guide itself said.

Meanwhile, agencies from Illinois, Kansas, Ohio, Pennsylvania and Washington suggested in 2013 the EPA establish a 500 millirem level, which the EPA partially agreed to do in its latest draft. But the EPA said when possible, additional protections should be set for the most sensitive populations, referring to its two-tier 100 millirem level.

A 'Tailored' Approach

Mike Keegan, an analyst for the National Rural Water Association, complimented the EPA's non-regulatory and transparent approach. The approach will allow decision makers to identify the "best solutions tailored to that community's unique circumstances," he said.

“When faced with contamination in the drinking water supply, local officials have to make immediate and difficult public welfare decisions,” Keegan told Bloomberg BNA in an e-mail. “Their options may be limited by lack of alternative sources of drinking water or no possible way to immediately treat the drinking water.”

To contact the reporter on this story: Rachel Leven in Washington at rleven@bna.com

To contact the editor responsible for this story: Larry Pearl at lpearl@bna.com

For More Information

The pre-publication Federal Register notice is at http://src.bna.com/fFV.

The draft Protective Action Guide is available at http://src.bna.com/fFX.

EPA Proposes Two-Tiered Approach For Radiological Events Water Guide

June 07, 2016

EPA is proposing a two-tiered approach for drinking water amendments to its protective action guides (PAGs) for radiological emergencies that would provide more protective exposure levels for sensitive populations but would still allow radioactivity in drinking water at orders of magnitude beyond the Safe Drinking Water Act (SDWA) limits for radionuclides.

The proposal, which EPA water chief Joel Beauvais signed June 3 and the agency posted on its website June 6, has already spurred strong negative reaction from environmentalists, with one environmentalist who has long watched the issue saying the proposed guidance would allow for radiation exposures equivalent to 250 chest X-rays per year and vast exceedances of the cancer risk range EPA applies to Superfund cleanups.

The source says the proposed levels would allow for radioactivity in drinking water at "orders of magnitude more lax than" the existing SDWA limits. "This is pretty astonishing in the wake of the [Flint], Michigan, scandal, which involved lead at the SDWA limit," the source adds.

The water amendments would deem protective action dose levels of 500 millirems/year (mrem/yr) in the first year after an incident for the general population, and 100 mrem/yr in the first year for infants, children age 15 and under, and pregnant or nursing women, according to a notice of availability for the draft PAG for drinking water after a radiological incident, expected to be

published in the *Federal Register* soon. The safety levels would be for emergency management officials to apply in the intermediate phase period after a radiological emergency -- which EPA in the document defines as up to one year after an incident. EPA says there currently is no intermediate PAG for drinking water, but decided that following the 2011 Fukushima, Japan, nuclear power plant incident, the agency needed a drinking water PAG.

Once the water amendments are published in the *Register*, the agency will accept public comment for 45 days. Following consideration of the comments, EPA will incorporate the drinking water amendments into the full PAG manual, and issue the manual for adoption into state, local, tribal and federal emergency response plans over a one-year period, the notice says.

The White House Office of Management & Budget (OMB) on May 18 approved the draft water amendments and sent them back to EPA, while EPA on May 19 forwarded the rest of the final PAG manual to OMB for interagency consideration.

EPA defines a PAG as "the projected dose to an individual from a release of radioactive material at which a specific protective action to reduce or avoid that dose is recommended." The agency says emergency management officials use a PAG to make decisions on actions to protect the public from radiation exposure during an emergency. These actions include "evacuation, shelter-in-place, temporary relocation, water and food restrictions." With regard to the water amendments, EPA expects them to be used as a tool by local emergency responders to "restrict consumption of drinking water contaminated during a radiological emergency," the agency says in the draft PAG for drinking water.

The levels are needed in case of a large-scale radiation contamination incident, EPA says in the *Register* notice. It says they are designed to work in concert with PAGs in place for other media for the intermediate phase, for instance, the Food and Drug Administration's 500 mrem PAG for ingestion of food.

Non-Regulatory Guidance

EPA stresses that its PAG manual is non-regulatory guidance, is not a legally binding standard and does not supersede environmental laws. The agency says in the notice that its PAG does not intend to define "safe" levels of exposure, but rather offers recommendations -- specifically projected radiation dose levels at which action is advised in order to lower or avoid that dose.

Local and state authorities have flexibility to apply the levels, EPA says. "In some cases they may find it prudent to use a single PAG (e.g., 100 mrem) as a target

for the whole population, while in other circumstances, authorities may find that it makes sense to use both targets simultaneously," the notice says. "For example, emergency managers can use a two-tiered approach to focus on protecting the most sensitive population with limited, alternate water resources."

The agency says it is using a two-tiered approach because it aims to "balance the goal of keeping radiation doses as low as possible with the practical and logistical challenges of providing alternative drinking water during the response to a disaster," the notice says.

The agency says it considered potential cumulative exposure from a radiological incident, but adds that "[u]ltimately, a PAG does not represent an 'acceptable' routine exposure; a PAG is a dose at which protective action is advised in order to reduce or avoid that dose."

EPA differentiates the PAG water amendments from SDWA maximum contaminant levels (MCLs) for radiological contaminants in drinking water. The MCLs are based on a lifetime exposure of 70 years, which EPA says is "appropriate for day-to-day normal operations," but it may not offer the necessary tools to emergency responders to determine whether an immediate protective action is needed.

"EPA expects that any drinking water system adversely impacted during a radiation contamination incident will take action to return to compliance with MCLs as soon as practicable," EPA says in the notice.

The agency presents default Derived Response Levels (DRLs) for some radionuclides, including cesium-137, iodine-131 and strontium/yttrium-90, which the agency says "are of particular interest for radiological incident scenarios where drinking water sources might be contaminated." For other radionuclides, EPA says emergency responders or others responsible for implementing the PAG will need to convert the PAG levels into DRLs, with the agency explaining in the water amendments how this can be calculated.

Advocates' Concerns

But environmentalists who earlier this year warned OMB against approving water PAGs that would greatly exceed SDWA levels are strenuously objecting to the draft document.

The environmentalist says EPA is proposing to allow the general population to be exposed to 10,350 pico-curies per liter of iodine-131 in water as compared to the SDWA limit of 3, a 3,450-fold increase. For strontium-90, the agency would allow

7,400 pico-curies per liter, compared to the SDWA limit of 8, a 925-fold increase, according to the source. For cesium-137, EPA would allow 16,570 pico-curies per liter, compared to the SDWA limit of 200, an 83-fold increase, the source says.

In response to these levels, Public Employees for Environmental Responsibility (PEER) Executive Director Jeff Ruch compares the proposal to the lead exposure issues entangling the agency in Flint, MI. "Given this monstrous proposal, it [is] unclear what lessons EPA learned from the contaminated water calamity of Flint, Michigan," Ruch says in a June 7 press release. "It is unfathomable that a public health agency would prescribe subjecting people to radioactive concentrations a thousand times above Safe Drinking Water Act limits as a 'protective' measure," he adds.

In addition, the environmentalist notes that EPA's PAG does not just apply to emergencies such as "dirty bombs" but to any radiological release where protective action may be weighed, such as a transportation incident, and that EPA in other documents says the intermediate phase could last for years after an incident.

Environmentalists also point out that the Obama administration pulled back on a similar proposal the Bush administration tried to move forward at the end of that administration, but now the Obama administration is suggesting drinking water limits for the general population that are slightly less stringent than the Bush proposal. For instance, the Bush EPA proposal for strontium-90 was 6,650 pCi/L, compared to the Obama EPA's proposal of 7,400 pCi/L, the environmentalist says.

Further, environmentalists point to internal EPA documents from several years ago that show EPA concluded that similar concentrations being proposed would vastly exceed MCLs for radionuclides, with one internal analysis estimating that under the proposal, drinking just one small glass of water at the level proposed for one particular radionuclide "would result in an exposure that corresponds to a lifetime of drinking liters of water per day at the MCL level."

The water amendments to the PAG also include actions officials should take to protect water sources as soon as notice of a radiological release is given, such as temporarily closing intake valves, blending water sources and importing water in tanker trucks. -- *Suzanne Yohannan* (syohannan@iwpnews.com

To: Huff, Lisa[Huff.Lisa@epa.gov]
Cc: Christ, Lisa[Christ.Lisa@epa.gov]; Ellis, Jerry[Ellis.Jerry@epa.gov]
From: Hernandez-Quinones, Samuel
Sent: Tue 6/7/2016 8:27:51 PM
Subject: RE: TAB bullets

Hi Lisa,

Here is my input.

Sam

Radiation Protective Action Guides – Drinking Water

On Monday, June 6 EPA announced its proposed Drinking Water Protective Action Guide for Radiologic Incidents. EPA is proposing non-regulatory guidance that emergency responders can use to protect citizens from the harmful effects of radiation in drinking water following a radiation contamination incident. EPA will be seeking public comment on the proposal for 45 days following publication in the Federal Register. (Sam Hernandez 202-564-1735).

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water

Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Huff, Lisa

Sent: Tuesday, June 07, 2016 3:51 PM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>
Subject: FW: TAB bullets

Sam,

Please draft a bullet for me on the Rads PAG going out.

Lisa Foersom Huff

Associate Branch Chief

Targeting and Analysis Branch

Standards and Risk Management Division

Office of Groundwater and Drinking Water

U.S. EPA

EPA East Bldg. Rm. 2331 C

202-566-0787

From: Huff, Lisa
Sent: Tuesday, June 07, 2016 3:50 PM
To: OW-OGWDW-Targeting & Analysis Branch
<OWOGWDWTargeting__Analysis_Branch@epa.gov>
Subject: TAB bullets

Please send me by COB tomorrow 6/8 bullets on significant meetings or milestones for you projects either this week or next.

Lisa Foersom Huff

Associate Branch Chief

Targeting and Analysis Branch

Standards and Risk Management Division

Office of Groundwater and Drinking Water

U.S. EPA

EPA East Bldg. Rm. 2331 C

202-566-0787

To: Hale, Olin[olin.hale@fema.dhs.gov]
Cc: Christ, Lisa[Christ.Lisa@epa.gov]; Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]; Ellis, Jerry[Ellis.Jerry@epa.gov]; DeCair, Sara[DeCair.Sara@epa.gov]; Perrin, Alan[Perrin.Alan@epa.gov]; Rogers, James D[James.Rogers3@fema.dhs.gov]; Blizzard, Jeffrey[jeffrey.blizzard@fema.dhs.gov]
From: Veal, Lee
Sent: Tue 6/7/2016 8:00:44 PM
Subject: RE: EPA Seeks Comment on Proposed Drinking Water Protective Action Guide (PAG) and Planning Guidance For Radiological Incidents

We have our friends in Office of Water to thank! I'm quite pleased.

Lee Ann B. Veal

Acting Deputy Director, Radiation Protection Division

Office of Radiation and Indoor Air

Office: 202-343-9448; Cell: 202-617-4322

www.epa.gov/radiation

From: Hale, Olin [mailto:olin.hale@fema.dhs.gov]
Sent: Tuesday, June 07, 2016 3:48 PM
To: Veal, Lee <Veal.Lee@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Ellis, Jerry <Ellis.Jerry@epa.gov>; DeCair, Sara <DeCair.Sara@epa.gov>; Perrin, Alan <Perrin.Alan@epa.gov>; Rogers, James D <James.Rogers3@fema.dhs.gov>; Blizzard, Jeffrey <jeffrey.blizzard@fema.dhs.gov>
Subject: Re: EPA Seeks Comment on Proposed Drinking Water Protective Action Guide (PAG) and Planning Guidance For Radiological Incidents

Lee,

Wonderful news, will do!

Best regards,
Olin

From: Veal, Lee [mailto:Veal.Lee@epa.gov]

Sent: Tuesday, June 07, 2016 03:39 PM
To: Hale, Olin
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Ellis, Jerry <Ellis.Jerry@epa.gov>; DeCair, Sara <DeCair.Sara@epa.gov>; Perrin, Alan <Perrin.Alan@epa.gov>
Subject: EPA Seeks Comment on Proposed Drinking Water Protective Action Guide (PAG) and Planning Guidance For Radiological Incidents

Olin,

EPA would like to share news about the upcoming Federal Register publication of a Drinking Water PAG proposal with the FRPCC. EPA expects a Federal Register publication in the next few days.

Pre-publication versions of the "Draft Protective Guide (PAG) for Drinking Water" and the " Notice of Availability" are available on our website now.

https://www.epa.gov/radiation/protective-action-guides-pags

EPA will be seeking comment on the Proposed Drinking Water Protective Action Guide (PAG) and Planning Guidance For Radiological Incidents. Public comments will be due 45 days after publication in the Federal Register.

Once Notice of Availability is published in the Federal Register, pre-publication versions will be replaced with links to the Federal Register and Docket.

Please share this information with the FRPCC and other federal partners as you think most appropriate.

Lee

Lee Ann B. Veal

Acting Deputy Director, Radiation Protection Division

Office of Radiation and Indoor Air

Office: 202-343-9448; Cell: 202-617-4322

www.epa.gov/radiation

From: White, Rick
Sent: Tuesday, June 07, 2016 11:45 AM
Subject: EPA Seeks Comment on Proposed Drinking Water Protective Action Guide (PAG) and Planning Guidance For Radiological Incidents

Good Morning-

You are receiving this e-mail because you have previously expressed interest in this topic-

Rick White

Acting Director, Center for Radiation Information and Outreach

Environmental Protection Agency

Office of Radiation and Indoor Air (ORIA)

To: Hale, Olin[olin.hale@fema.dhs.gov]
Cc: Christ, Lisa[Christ.Lisa@epa.gov]; Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]; Ellis, Jerry[Ellis.Jerry@epa.gov]; DeCair, Sara[DeCair.Sara@epa.gov]; Perrin, Alan[Perrin.Alan@epa.gov]
From: Veal, Lee
Sent: Tue 6/7/2016 7:39:57 PM
Subject: EPA Seeks Comment on Proposed Drinking Water Protective Action Guide (PAG) and Planning Guidance For Radiological Incidents

Olin,

EPA would like to share news about the upcoming Federal Register publication of a Drinking Water PAG proposal with the FRPCC. EPA expects a Federal Register publication in the next few days.

Pre-publication versions of the "Draft Protective Guide (PAG) for Drinking Water" and the " Notice of Availability" are available on our website now.

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Lee

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You are receiving this e-mail because you have previously expressed interest in this topic-

Rick White

Acting Director, Center for Radiation Information and Outreach

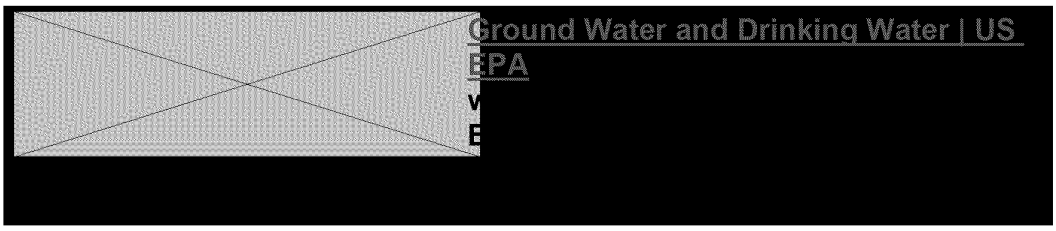
Environmental Protection Agency

Office of Radiation and Indoor Air (ORIA)

To: Christ, Lisa[Christ.Lisa@epa.gov]; Huff, Lisa[Huff.Lisa@epa.gov]; Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]; Ellis, Jerry[Ellis.Jerry@epa.gov]; Burneson, Eric[Burneson.Eric@epa.gov]; Grevatt, Peter[Grevatt.Peter@epa.gov]; Osegueda, Carlos[Osegueda.Carlos@epa.gov]
Cc: Harris, Adrienne[Harris.Adrienne@epa.gov]; Flaharty, Stephanie[Flaharty.Stephanie@epa.gov]; Greene, Ashley[Greene.Ashley@epa.gov]; Davis, CatherineM[Davis.CatherineM@epa.gov]; Loop, Travis[Loop.Travis@epa.gov]; Dennis, Allison[Dennis.Allison@epa.gov]
From: Wadlington, Christina
Sent: Mon 6/6/2016 7:07:05 PM
Subject: PAGS is LIVE

We're live: www.epa.gov/safewater

See the Scrolling Banner or the "Highlights" section



From: Wadlington, Christina
Sent: Monday, June 6, 2016 10:09 AM
To: Christ, Lisa; Huff, Lisa; Hernandez-Quinones, Samuel; Ellis, Jerry; Burneson, Eric
Cc: Harris, Adrienne; Flaharty, Stephanie; Grevatt, Peter; Greene, Ashley; Davis, CatherineM; Osegueda, Carlos
Subject: RE: PAGS release: Timing for today

Please note minor changes to the desk statement as requested by OAR.

Note: The desk statement will be used for the website so, if there are any concerns please me know.

Christina Wadlington

Communications Director

Office of Ground Water and Drinking Water

U.S. Environmental Protection Agency

Tel: 202.566.1859

Email: wadlington.christina@epa.gov

From: Wadlington, Christina
Sent: Monday, June 06, 2016 9:40 AM
To: Christ, Lisa <Christ.Lisa@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Ellis, Jerry <Ellis.Jerry@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Harris, Adrienne <Harris.Adrienne@epa.gov>; Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>; Grevatt, Peter <Grevatt.Peter@epa.gov>; Greene, Ashley <Greene.Ashley@epa.gov>; Davis, CatherineM <Davis.CatherineM@epa.gov>; Osegueda, Carlos <Osegueda.Carlos@epa.gov>
Subject: PAGS release: Timing for today

Good Morning,

Provided is the timing for today.

10 – 1pm:	Phone calls to stakeholders (OGWDW and OAR)
	Congressional notifications (OCIR)
2 pm:	Web content goes live
2:30 p.m.	Post social media

Broad stakeholder notification via Water Headlines

Please let me know if you have any questions.

Thank you.

Christina Wadlington

Communications Director

Office of Ground Water and Drinking Water

U.S. Environmental Protection Agency

Tel: 202.566.1859

Email: wadlington.christina@epa.gov

From: Wadlington, Christina
Sent: Friday, June 03, 2016 1:01 PM
To: Christ, Lisa <Christ.Lisa@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Ellis, Jerry <Ellis.Jerry@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Lopez-Carbo, Maria <Lopez-Carbo.Maria@epa.gov>; Bergman, Ronald <Bergman.Ronald@epa.gov>; Thompkins, Anita <Thompkins.Anita@epa.gov>; Harris, Adrienne <Harris.Adrienne@epa.gov>; Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>; Grevatt, Peter <Grevatt.Peter@epa.gov>; Greene, Ashley <Greene.Ashley@epa.gov>
Subject: PAG roll out

Provided is the PAGS rollout approved by OPA. Please share with the relevant regional staff.

Note1. Please ask OAR to wait before pressing the publish button until we have confirmed exact times from OPA for Monday.

Note2. Congressional notifications will most likely go on Monday morning. We're confirming with OPA.

To: Burneson, Eric[Burneson.Eric@epa.gov]
Cc: Wadlington, Christina[Wadlington.Christina@epa.gov]; Harris, Adrienne[Harris.Adrienne@epa.gov]; Oshida, Phil[Oshida.Phil@epa.gov]; Christ, Lisa[Christ.Lisa@epa.gov]; Osegueda, Carlos[Osegueda.Carlos@epa.gov]
From: Grevatt, Peter
Sent: Mon 6/6/2016 4:34:29 PM
Subject: Re: PAGS release: Timing for today

Thanks Eric!

Sent from my iPhone

On Jun 6, 2016, at 12:27 PM, Burneson, Eric <Burneson.Eric@epa.gov> wrote:

> Just finished the calls. Had to leave messages for AWWA , CWA and GWPC. I Spoke to everyone else.
>
> Sent from my iPhone
>
> On Jun 6, 2016, at 11:53 AM, Burneson, Eric <Burneson.Eric@epa.gov> wrote:
>
>> Peter and I just spoke. I am starting the calls now.
>>
>> Sent from my iPhone
>>
>> On Jun 6, 2016, at 10:18 AM, Wadlington, Christina <Wadlington.Christina@epa.gov> wrote:
>>
>>> Good Morning,
>>>
>>> Since both of you are out most of this morning, do you have a preference regarding who makes OGWDW's notification calls? Or will either of you be available during lunch?
>>>
>>> Here is our call list:
>>>
>>> •□□□□□□□□ ASDWA – Jim Taft (703-812-9507)
>>>
>>> •□□□□□□□□ AWWA – Tracey Mehan (202-628-8303) or David LaFrance (303-910-4618)

•□□□□□□□□ AMWA – Diane van de Hei (202-331-2820)

•□□□□□□□□ National Association of Water Companies – Michael Deane (202-379-2329)

•□□□□□□□□ NRWA – Sam Wade (Ex. 6 - Personal Privacy (cell))

•□□□□□□□□ Clean Water Action – Lynn Thorpe (202-895-0420, ext. 109)

•□□□□□□□□ NRDC – Mae Wu (202-289-2409)

•□□□□□□□□ GWPC - Mike Paque Ex. 6 - Personal Privacy (cell))

Christina Wadlington

Communications Director

Office of Ground Water and Drinking Water

U.S. Environmental Protection Agency

Tel: 202.566.1859

Email: wadlington.christina@epa.gov

From: Wadlington, Christina
Sent: Monday, June 06, 2016 10:10 AM
To: Christ, Lisa <Christ.Lisa@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Ellis, Jerry <Ellis.Jerry@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Harris, Adrienne <Harris.Adrienne@epa.gov>; Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>; Grevatt, Peter <Grevatt.Peter@epa.gov>; Greene, Ashley <Greene.Ashley@epa.gov>; Davis, CatherineM <Davis.CatherineM@epa.gov>; Osegueda, Carlos <Osegueda.Carlos@epa.gov>
Subject: RE: PAGS release: Timing for today

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Christina Wadlington

Communications Director

Office of Ground Water and Drinking Water

U.S. Environmental Protection Agency

Tel: 202.566.1859

Email: wadlington.christina@epa.gov

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To: Christ, Lisa <Christ.Lisa@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Ellis, Jerry <Ellis.Jerry@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Harris, Adrienne <Harris.Adrienne@epa.gov>; Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>; Grevatt, Peter <Grevatt.Peter@epa.gov>; Greene, Ashley <Greene.Ashley@epa.gov>; Davis, CatherineM <Davis.CatherineM@epa.gov>; Osegueda, Carlos <Osegueda.Carlos@epa.gov>
Subject: PAGS release: Timing for today

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2 pm: Web content goes live

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Please let me know if you have any questions.

Thank you.

Christina Wadlington

Communications Director

Office of Ground Water and Drinking Water

U.S. Environmental Protection Agency

Tel: 202.566.1859

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Sent: Friday, June 03, 2016 1:01 PM
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Cc: Lopez-Carbo, Maria <Lopez-Carbo.Maria@epa.gov>; Bergman, Ronald <Bergman.Ronald@epa.gov>; Thompkins, Anita <Thompkins.Anita@epa.gov>; Harris, Adrienne <Harris.Adrienne@epa.gov>; Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>; Grevatt, Peter <Grevatt.Peter@epa.gov>; Greene, Ashley <Greene.Ashley@epa.gov>
Subject: PAG roll out

Provided is the PAGS rollout approved by OPA. Please share with the relevant regional staff.

Note1. Please ask OAR to wait before pressing the publish button until we have confirmed exact times from OPA for Monday.

Note2. Congressional notifications will most likely go on Monday morning. We're confirming with OPA.

<ROLL OUT PAGS 6 3 16.v2.docx>

To: Nesky, Anthony[Nesky.Tony@epa.gov]
Cc: Christ, Lisa[Christ.Lisa@epa.gov]; Ellis, Jerry[Ellis.Jerry@epa.gov]; Wadlington, Christina[Wadlington.Christina@epa.gov]
From: Hernandez-Quinones, Samuel
Sent: Mon 6/6/2016 3:33:32 PM
Subject: Re: PAG Webpages Ready for Your Review--the words "trigger level" have been replaced.
EPA Drinking Water PAG FR Notice 6-1-16r.pre-pub.pdf

Hi Tony,

here is the PAGs FRN file.

Thanks

Sam

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Environmental Protection Agency
Office of Water
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Nesky, Anthony
Sent: Monday, June 6, 2016 11:30 AM
To: Wadlington, Christina; Ellis, Jerry; Hernandez-Quinones, Samuel; DeCair, Sara
Cc: White, Rick; Perrin, Alan; Christ, Lisa
Subject: RE: PAG Webpages Ready for Your Review--the words "trigger level" have been replaced.

Thank you for your help!

Tony Nesky

Center for Radiation Information and Outreach

Tel: 202-343-9597

nesky.tony@epa.gov

From: Wadlington, Christina
Sent: Monday, June 06, 2016 11:28 AM
To: Nesky, Anthony <Nesky.Tony@epa.gov>; Ellis, Jerry <Ellis.Jerry@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; DeCair, Sara <DeCair.Sara@epa.gov>
Cc: White, Rick <White.Rick@epa.gov>; Perrin, Alan <Perrin.Alan@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>
Subject: RE: PAG Webpages Ready for Your Review--the words "trigger level" have been replaced.

Thanks for chatting Tony. We're good to go.

Sam/Lisa/Jerry,

OAR is ready to go. So if you could send them the document over, we should be ready for 2pm.

Thank you everyone.

Christina Wadlington

Communications Director

Office of Ground Water and Drinking Water

U.S. Environmental Protection Agency

Tel: 202.566.1859

Email: wadlington.christina@epa.gov

From: Wadlington, Christina
Sent: Monday, June 06, 2016 7:46 AM
To: Nesky, Anthony <Nesky.Tony@epa.gov>; Ellis, Jerry <Ellis.Jerry@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; DeCair, Sara <DeCair.Sara@epa.gov>
Cc: White, Rick <White.Rick@epa.gov>; Perrin, Alan <Perrin.Alan@epa.gov>
Subject: RE: PAG Webpages Ready for Your Review--the words "trigger level" have been replaced.

Anthony,

I apologize, but I don't think you were provided with the OPA approved language for the PAGS release.

It might be easier if we set up a quick meeting to chat?

Christina Wadlington

Communications Director

Office of Ground Water and Drinking Water

U.S. Environmental Protection Agency

Tel: 202.566.1859

Email: wadlington.christina@epa.gov

From: Nesky, Anthony
Sent: Friday, June 03, 2016 8:44 PM
To: Ellis, Jerry <Ellis.Jerry@epa.gov>; Wadlington, Christina <Wadlington.Christina@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; DeCair, Sara <DeCair.Sara@epa.gov>
Cc: White, Rick <White.Rick@epa.gov>; Perrin, Alan <Perrin.Alan@epa.gov>
Subject: PAG Webpages Ready for Your Review--the words "trigger level" have been replaced.

Dear Christina, Jerry, Sam and Sara:

The webpage language for the proposed drinking water is ready for your review. There is a last-minute change to the text. You had agreed to my suggestion to replace “tipping point” with “trigger level.” My management does not like either of these phrases, and I see the point. “Trigger-level” could incorrectly imply that alternative water would not be supplied until that trigger level is hit—which is not the case. The point is to avoid reaching the PAG dose.

On the webpage, we replaced “trigger-level” with a shortened definition from the official proposal: There was a second reference to a trigger level , but this was replaced with previously-approved language from the fact sheet for public water systems.

On the two fact sheets, “trigger-level” was replaced with previously approved language from the Desk Statement.

All changes are highlighted on the web page so that you can find them easily. Links are below. You will need to log-in with your LAN ID and password to view them. Lately there have been some problems with the Drupal system. If you get a “page not found” error, you will need to log into Drupal first. If you don’t have access to Drupal, I can come over there and log in for you.

-

PAG Webpage:

https://wcms.epa.gov/node/150755/revisions/380891/view

-

Fact Sheet:

https://wcms.epa.gov/radiation/fact-sheet-proposed-drinking-water-protective-action-guide-pag-radiological-emergencies

-

Fact Sheet for Public Water Systems

https://wcms.epa.gov/radiation/proposed-epa-drinking-water-protective-action-guide-pag-radiological-emergencies

-

Please let me know ASAP if you approve these changes or if you need any edits. Please call

me if you have questions or need help with Drupal.

Tony Nesky

Center for Radiation Information and Outreach

Tel: 202-343-9597

nesky.tony@epa.gov

The EPA's Deputy Assistant Administrator for the Office of Water, Joel Beauvais, signed the following document on 06/03/2016, and EPA is submitting it for publication in the *Federal Register* (FR). While we have taken steps to ensure the accuracy of this Internet version of the document, it is not the official version. Please refer to the official version in a forthcoming FR publication, which will appear on Regulations.gov (http://www.regulations.gov) in Docket No. EPA-HQ-OAR-2007-0268. Once the official version of this document is published in the FR, this version will be removed from the Internet and replaced with a link to the official version.

6560-50-P

ENVIRONMENTAL PROTECTION AGENCY

[EPA-HQ-OAR-2007-0268; FRL- -]

Notice of Availability: Draft Protective Action Guide (PAG) for Drinking Water after a Radiological Incident

AGENCY: Environmental Protection Agency (EPA).

ACTION: Notice of Document Availability; Request for Public Comment.

SUMMARY: As part of its mission to protect human health and the environment, the Environmental Protection Agency publishes protective action guides to help federal, state, local and tribal emergency response officials make radiation protection decisions during emergencies. EPA, in coordination with a multi-agency working group within the Federal Radiological Preparedness Coordinating Committee, is proposing an addition to the 2013 revised interim Protective Action Guides and Planning Guidance for Radiological Incidents ("2013 revised PAG Manual" hereafter) to provide guidance on drinking water. The Draft Protective Action Guide for Drinking Water is now available in the EPA Docket, under ID No. **EPA-HQ-OAR-2007-0268**, and EPA is requesting comment on the draft guide.

DATES: Comments must be received on or before [insert date], 45 days after date of publication in the Federal Register.

ADDRESSES: Submit your comments, identified by Docket ID No. **EPA-HQ-OAR-2007-0268,** to the *Federal eRulemaking Portal:* http://www.regulations.gov. Follow the online instructions for submitting comments. Once submitted, comments cannot be edited or withdrawn. The EPA may publish any comment received to its public docket. Do not submit electronically any information you consider to be Confidential Business Information (CBI) or

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other information whose disclosure is restricted by statute. Multimedia submissions (audio, video, etc.) must be accompanied by a written comment. The written comment is considered the official comment and should include discussion of all points you wish to make. The EPA will generally not consider comments or comment contents located outside of the primary submission (i.e. on the web, cloud, or other file sharing system). For additional submission methods, the full EPA public comment policy, information about CBI or multimedia submissions, and general guidance on making effective comments, please visit http://www2.epa.gov/dockets/commenting-epa-dockets.

FOR FURTHER INFORMATION CONTACT: Lisa M. Christ, Standards and Risk Management Division, Office of Ground Water and Drinking Water , Mail Code 4607M, U.S. Environmental Protection Agency, 1200 Pennsylvania Avenue NW, Washington, DC 20460; telephone number: (202) 564-8354; fax number: (202) 564-3758; E-mail: *christ.lisa@epa.gov*.

SUPPLEMENTARY INFORMATION:

1. General Information

A. Does this Action Apply to me?

This action does not impose any requirements on anyone. It notifies interested parties of EPA's proposed, draft drinking water protective action guide (PAG) and requests public comment. The drinking water PAG will help federal, state, local, tribal officials and public water systems make decisions about use of water during radiological emergencies. The drinking water PAG is non-regulatory guidance.

B. What authority does EPA have to provide Protective Action Guidance?

The historical and legal basis of EPA's role in the 2013 PAG Manual begins with Reorganization Plan No. 3 of 1970, in which the Administrator of the EPA assumed all the

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functions of the Federal Radiation Council (FRC), including the charge to "…advise the President with respect to radiation matters, directly or indirectly affecting health, including guidance for all federal agencies in the formulation of radiation standards and in the establishment and execution of programs of cooperation with [s]tates." (Reorg. Plan No. 3 of 1970, sec. 2(a) (7), 6(a) (2); § 274.h of the Atomic Energy Act of 1954, as amended (AEA), codified at 42 U.S.C. § 2021(h)). Recognizing this role, the Federal Emergency Management Agency (FEMA) directed EPA, in its Radiological Emergency Planning and Preparedness Regulations, to "establish Protective Action Guides (PAGs) for all aspects of radiological emergency planning in coordination with appropriate federal agencies." (44 CFR 351.22(a)). FEMA also tasked EPA with preparing "guidance for state and local governments on implementing PAGs, including recommendations on protective actions which can be taken to mitigate the potential radiation dose to the population."(44 CFR 351.22(b)). All of this information was to "be presented in the Environmental Protection Agency (EPA) 'Manual of Protective Action Guides and Protective Actions for Nuclear Incidents.'"(44 CFR 351.22(b)).

Additionally, section 2021(h) charged the Administrator with performing "such other functions as the President may assign to him [or her] by Executive Order." Executive Order 12656 states that the Administrator shall "[d]evelop, for national security emergencies, guidance on acceptable emergency levels of nuclear radiation…." (Executive Order No. 12656, sec. 1601(2)). EPA's role in PAGs development was reaffirmed by the National Response Framework, Nuclear/Radiological Incident Annex of June 2008.

C. What is the PAG Manual: Protective Action Guides and Planning Guidance for Radiological Incidents?

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In 2013, EPA revised the PAG Manual to provide federal, state and local emergency management officials with guidance for responding to radiological emergencies (78 FR 22257, April 15, 2013). See the 2013 PAG Manual at https://www.epa.gov/radiation/protective-action-guides-pags. A protective action guide (PAG) is the projected dose to an individual from a release of radioactive material at which a specific protective action to reduce or avoid that dose is recommended. Emergency management officials use PAGs for making decisions regarding actions to protect the public from exposure to radiation during an emergency. Such actions include evacuation, shelter-in-place, temporary relocation, water and food restrictions.

The PAGs are based on the following essential principles, which also apply to the selection of any protective action during an incident:

- Prevent acute effects.
- Balance protection with other important factors and ensure that actions result in more benefit than harm.
- Reduce risk of chronic effects.

The PAG Manual is not a legally binding regulation or standard and does not supersede any environmental laws; PAGs are not intended to define "safe" or "unsafe" levels of exposure or contamination. As indicated by the use of non-mandatory language such as "may," "should" and "can," the Manual only provides recommendations and does not confer any legal rights or impose any legally binding requirements upon any member of the public, states or any federal agency. Rather, the PAG Manual provides projected radiation dose levels at which specific actions are recommended in order to reduce or avoid that dose. The 2013 revised interim PAG Manual is designed to provide flexibility to be more or less restrictive as deemed appropriate by decision makers based on the unique characteristics of the incident and the local situation.

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D. What additional guidance is being proposed for the PAG Manual?

The draft drinking water protective action guidance was developed by a multi-agency PAG Subcommittee of the Federal Radiological Preparedness Coordinating Committee and is published by the EPA with concurrence from the Department of Energy, the Department of Defense, the Department of Homeland Security (DHS), including the Federal Emergency Management Agency, the Nuclear Regulatory Commission, the Department of Health and Human Services, including both the Centers for Disease Control and Prevention and the Food and Drug Administration (FDA), the U.S. Department of Agriculture and the Department of Labor.

A large scale radiation contamination incident could impact the United States, driving the need for a pre-established drinking water PAG. EPA is proposing a two-tiered intermediate phase drinking water PAG of 100 mrem projected dose in the first year for infants, children and pregnant or nursing women and 500 mrem projected dose in the first year for the general population. The proposed PAG is designed to work in concert with the other Protective Action Guides currently in place for other media in the intermediate phase (i.e., the Food and Drug Administration's 500 mrem PAG for ingestion of food) and provides an additional level of protection for the most sensitive life stages. Authorities have flexibility on how to apply the PAG. In some cases they may find it prudent to use a single PAG (e.g., 100 mrem) as a target for the whole population, while in other circumstances, authorities may find that it makes sense to use both targets simultaneously. For example, emergency managers can use a two-tiered approach to focus on protecting the most sensitive population with limited, alternate water resources. Because the water and food PAGs are designed to be used in concert, the appropriate protective actions will be influenced by the exposure scenario and factors that influence the

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viability of alternative approaches to reducing that dose.

This proposed, additional draft guidance recommends protective actions when drinking water may be impacted by a radiological or nuclear incident. The two-tier approach seeks to balance the goal of keeping radiation doses as low as possible with the practical and logistical challenges of providing alternative drinking water during the response to a disaster. EPA has included examples of estimated costs for selected drinking water protective actions in the Docket, ID No. **EPA-HQ-OAR-2007-0268**. In developing the drinking water PAG, the Agency considered potential cumulative exposure from a radiation incident. Ultimately, a PAG does not represent an "acceptable" routine exposure; a PAG is a dose at which protective action is advised in order to reduce or avoid that dose. Every PAG is developed with the same three principles: prevent acute effects, balance protection with other important factors and ensure that actions result in more benefit than harm, and reduce risk of chronic effects. Emergency management officials should consider all exposure routes when making protective action decisions in an emergency.

Under the Safe Drinking Water Act (SDWA), the Agency has established maximum contaminant levels (MCLs) for radiological contaminants in drinking water. The National Primary Drinking Water Regulations (NPDWR) for radionuclides are based on lifetime exposure criteria and assume 70 years of continued exposure to contaminants in drinking water. While the SDWA framework is appropriate for day-to-day normal operations, it may not provide the necessary tools to assist emergency responders with determining the need for an immediate protective action. EPA expects that any drinking water system adversely impacted during a radiation contamination incident will take action to return to compliance with MCLs as soon as practicable.

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E. How were comments received on the 2013 draft PAG Manual considered in developing this proposal?

On April 15, 2013, EPA published a Federal Register notice requesting public comments on the appropriateness of developing and incorporating a drinking water PAG in the revised PAG Manual (78 FR 22257).

Regarding the specific issue of drinking water, the Agency received about 50 comment letters from members of the public, state and local emergency response and health organizations, environmental advocates, industry associations, organizations opposed to nuclear power, and from national and international radiation protection organizations.

Several commenters from state emergency management agencies and radiation control programs expressed an urgent need for EPA to establish a drinking water PAG, pointing out that drinking water is the only media not currently addressed in the PAG Manual. Commenters stated that a drinking water PAG is a critical aspect of a coordinated emergency response after a radiation contamination incident.

Commenters representing states agencies from Ohio, Kansas, Pennsylvania, Illinois and Washington suggested that a drinking water PAG should be established at the 500 mrem level, to be consistent with the FDA food PAG and with the DHS guidance[1] for water. While EPA agrees with the need of establishing a drinking water PAG, which is consistent with currently available guidance, it is also important to note that EPA believes that when possible, PAG recommendations should provide an additional level of protection to sensitive life-stages. For short-term incidents, it is appropriate to consider a lower tier PAG level of 100 mrem for sensitive life-stages including pregnant women, nursing women and children 15 years old and

[1] Guidance established by the Department of Homeland Security as an intermediate-level PAG for drinking water interdiction (73 FR 45029, April 1, 2008).

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under. This approach of setting a two-tier level of protection incorporates suggestions submitted by commenters regarding the adequate consideration of children and sensitive subpopulations. There is an abundant precaution built into the derivation of the drinking water PAG through a variety of assumptions, including amount of water consumed, exposure duration and dose-response modeling, using the dose-response for the most sensitive life stages to derive the PAG for children through age 15 years. Today's proposal ensures that protective measures are appropriate for all members of the public, including sensitive subpopulations.

In contrast, several commenters from environmental protection advocate organizations suggested that a drinking water PAG is not needed, and urged EPA to base any emergency response measures regarding drinking water solely on the NPDWR for Radionuclides MCLs. Some commenters expressed concerns that establishing a drinking water PAG would weaken existing environmental standards and regulations. However, the drinking water standards are legal limits designed to prevent health effects from everyday exposure to low levels of radiation over long periods and they are not changing with this proposal.

Estimated risk of excess cancer cases for lifetime exposure (70 years) to radioactive contaminants in drinking water at 4 mrem/yr (the MCL) generally falls in a range of risks deemed acceptable by the Agency's regulations. Estimated risks associated with a shorter (one year) exposure to radioactivity in drinking water at the proposed PAG levels fall within a similar range. Emergency guides are temporary measures to minimize risk while enabling prioritization of limited resources during an emergency response.

The PAG levels are guidance for emergency situations; they do not supplant any standards or regulations, nor do they affect the stringency or enforcement of any standards or regulations. The PAG levels are intended to be used only in an emergency when radiation levels have already

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exceeded environmental standards. EPA expects that any drinking water system adversely impacted during a radiation incident will take action to return to compliance with Safe Drinking Water Act levels as soon as practicable.

F. When will the PAG Manual be finalized?

Once comments on this proposed, additional draft action have been addressed, EPA will add drinking water guidance to the full PAG Manual, which will then be issued in final form for incorporation into state, local, tribal and federal emergency response plans over a one-year implementation timeframe.

G. What Should I Consider as I Prepare My Comments for EPA?

When submitting comments, remember to:

- Identify the rulemaking by docket number, subject heading, Federal Register date and page number.
- Follow directions—the EPA may ask you to respond to specific questions or organize comments by referencing the chapter number of the draft action guide
- Explain why you agree or disagree; suggest alternatives and substitute language for your requested changes.
- Describe any assumptions and provide technical information and data that you used.
- If you estimate potential costs or burdens, explain how you arrived at your estimate in sufficient detail to allow it to be reproduced.
- Illustrate your concerns with specific examples and suggest alternatives.
- Explain your views as clearly as possible, avoiding the use of profanity or personal threats.
- Make sure to submit your comments by the comment period deadline identified.

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H. What Specific Comments are Being Sought?

While all comments regarding any aspect of the draft drinking water PAG guidance will be considered, please comment on the following issues specifically:

- Please comment on the appropriateness of the drinking water PAG and the guidance for advance planning.
- Please comment on what implementation challenges might be associated with the two-tiered approach to the water PAG that EPA should consider, and suggest additional guidance that would be helpful.
- Please comment on whether (and if so why) EPA should reconsider using a single-tier drinking water PAG rather than tiered approach proposed in the draft action guide.
- Please suggest additional guidance that would aid pre-incident planning and implementation specific to your community's drinking water systems.
- Please comment on how this guidance should be implemented in emergency response and recovery plans at all levels of government, including considerations for public communications during an emergency.

In the future, calculations and derived response levels will be provided in the Federal Radiological Monitoring and Assessment Center (FRMAC) Assessment Manuals. Emergency planners are referred to FRMAC Monitoring and Sampling Methods to assess surface and drinking water impacts from a radiological emergency. See the Assessment and Monitoring &

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Sampling folders at http://www.nv.doe.gov/nationalsecurity/homelandsecurity/frmac/manuals.aspx. After considering public comments, EPA intends to issue a final PAG Manual, which will supersede the 1992 PAG Manual and the 2013 revised PAG Manual.

Dated: June 3, 2016.

Joel Beauvais,

Deputy Assistant Administrator, Office of Water.

ED_001057_00005469

To: Christ, Lisa[Christ.Lisa@epa.gov]
Cc: Huff, Lisa[Huff.Lisa@epa.gov]; Burneson, Eric[Burneson.Eric@epa.gov]
From: Harris, Adrienne
Sent: Mon 6/6/2016 3:20:48 PM
Subject: RE: Name of team members

Hi Lisa,

I got more information from Sonia this is for the shout-out. Please let me know what managers I should include, as well. Thanks!

Adrienne O. Harris
Acting Special Assistant

Office of Ground Water and Drinking Water
(202) 250-8793 (office)

From: Christ, Lisa
Sent: Monday, June 06, 2016 10:49 AM
To: Harris, Adrienne <Harris.Adrienne@epa.gov>
Cc: Huff, Lisa <Huff.Lisa@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>
Subject: Re: Name of team members

PAG members. Samuel Hernandez-Quinones and

Jerry Ellis.

Sent from my iPhone

On Jun 6, 2016, at 10:40 AM, Harris, Adrienne <Harris.Adrienne@epa.gov> wrote:

Hi Lisa,

Will you please provide the PAG team members? Thanks!

Adrienne O. Harris
Acting Special Assistant

Office of Ground Water and Drinking Water
(202) 250-8793 (office)

From: Altieri, Sonia
Sent: Monday, June 06, 2016 8:59 AM
To: Harris, Adrienne <Harris.Adrienne@epa.gov>
Subject: Fwd: Name of team members

Adrienne,

I understand Ashley is out of the office. I appreciate your assistance. Sonia

Sent from my iPhone

Begin forwarded message:

From: "Altieri, Sonia" <Altieri.Sonia@epa.gov>
Date: June 6, 2016 at 8:57:17 AM EDT
To: "Greene, Ashley" <Greene.Ashley@epa.gov>
Subject: Name of team members

Ashley,

Please provide the names of those who worked on the LCR letters and the PAG.
Thanks!

6/6	STATEMENT: PAGS for Drinking Water	The proposed drinking water PAG is non-regulatory guidance for emergencies only. The proposed PAG does not affect EPA's drinking water standards for radionuclides. Affected public water systems are expected to take actions to return to drinking water standards as soon as	Julia Valentine	No

practicable

To: Huff, Lisa[Huff.Lisa@epa.gov]
Cc: Burneson, Eric[Burneson.Eric@epa.gov]; Christ, Lisa[Christ.Lisa@epa.gov]
From: Harris, Adrienne
Sent: Mon 6/6/2016 2:40:38 PM
Subject: FW: Name of team members

Hi Lisa,

Will you please provide the PAG team members? Thanks!

Adrienne O. Harris
Acting Special Assistant

Office of Ground Water and Drinking Water
(202) 250-8793 (office)

From: Altieri, Sonia
Sent: Monday, June 06, 2016 8:59 AM
To: Harris, Adrienne <Harris.Adrienne@epa.gov>
Subject: Fwd: Name of team members

Adrienne,

I understand Ashley is out of the office. I appreciate your assistance. Sonia

Sent from my iPhone

Begin forwarded message:

From: "Altieri, Sonia" <Altieri.Sonia@epa.gov>
Date: June 6, 2016 at 8:57:17 AM EDT
To: "Greene, Ashley" <Greene.Ashley@epa.gov>
Subject: Name of team members

Ashley,

Please provide the names of those who worked on the LCR letters and the PAG. Thanks!

6/6	STATEMENT: PAGS for Drinking Water	The proposed drinking water PAG is non-regulatory guidance for emergencies only. The proposed PAG does not affect EPA's drinking water standards for radionuclides. Affected public water systems are expected to take actions to return to drinking water standards as soon as practicable	Julia Valentine	No

To: Christ, Lisa[Christ.Lisa@epa.gov]; Harris, Adrienne[Harris.Adrienne@epa.gov]; Huff, Lisa[Huff.Lisa@epa.gov]; Oshida, Phil[Oshida.Phil@epa.gov]
From: Wadlington, Christina
Sent: Mon 6/6/2016 2:10:45 PM
Subject: FW: PAGS release: Timing for today

Are both Eric and Peter out today? Who can make the stakeholder notifications calls?

Christina Wadlington

Communications Director

Office of Ground Water and Drinking Water

U.S. Environmental Protection Agency

Tel: 202.566.1859

Email: wadlington.christina@epa.gov

From: Wadlington, Christina
Sent: Monday, June 06, 2016 9:40 AM
To: Christ, Lisa <Christ.Lisa@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Ellis, Jerry <Ellis.Jerry@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Harris, Adrienne <Harris.Adrienne@epa.gov>; Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>; Grevatt, Peter <Grevatt.Peter@epa.gov>; Greene, Ashley <Greene.Ashley@epa.gov>; Davis, CatherineM <Davis.CatherineM@epa.gov>; Osegueda, Carlos <Osegueda.Carlos@epa.gov>
Subject: PAGS release: Timing for today

Good Morning,

Provided is the timing for today.

10 – 1pm: Phone calls to stakeholders (OGWDW and OAR)

Congressional notifications (OCIR)

2 pm: Web content goes live

2:30 p.m. Post social media

Broad stakeholder notification via Water Headlines

Please let me know if you have any questions.

Thank you.

Christina Wadlington

Communications Director

Office of Ground Water and Drinking Water

U.S. Environmental Protection Agency

Tel: 202.566.1859

Email: wadlington.christina@epa.gov

From: Wadlington, Christina
Sent: Friday, June 03, 2016 1:01 PM
To: Christ, Lisa <Christ.Lisa@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Ellis, Jerry <Ellis.Jerry@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Lopez-Carbo, Maria <Lopez-Carbo.Maria@epa.gov>; Bergman, Ronald <Bergman.Ronald@epa.gov>; Thompkins, Anita <Thompkins.Anita@epa.gov>; Harris, Adrienne <Harris.Adrienne@epa.gov>; Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>; Grevatt, Peter <Grevatt.Peter@epa.gov>; Greene, Ashley <Greene.Ashley@epa.gov>
Subject: PAG roll out

Provided is the PAGS rollout approved by OPA. Please share with the relevant regional staff.

Note1. Please ask OAR to wait before pressing the publish button until we have confirmed exact times from OPA for Monday.

Note2. Congressional notifications will most likely go on Monday morning. We're confirming with OPA.

To: Flaharty, Stephanie[Flaharty.Stephanie@epa.gov]; Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]
Cc: Christ, Lisa[Christ.Lisa@epa.gov]
From: Wadlington, Christina
Sent: Mon 6/6/2016 12:40:37 PM
Subject: RE: PAG Pre-pub version

Thanks Steph,

Sam/TAB, can you please update the metadata before sending this over?

Christina Wadlington

Communications Director

Office of Ground Water and Drinking Water

U.S. Environmental Protection Agency

Tel: 202.566.1859

Email: wadlington.christina@epa.gov

From: Flaharty, Stephanie
Sent: Monday, June 06, 2016 8:39 AM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>; Greene, Ashley <Greene.Ashley@epa.gov>; Wadlington, Christina <Wadlington.Christina@epa.gov>; Harris, Adrienne <Harris.Adrienne@epa.gov>; Grevatt, Peter <Grevatt.Peter@epa.gov>
Subject: PAG Pre-pub version
Importance: High

Good Morning Sam,

Joel signed the PAG FR notice on Friday. I've attached the pre-pub PDF for OAR posting. (We post the unsigned document). Please coordinate with OAR ***to be prepared*** to post by noon today (Christina will give us OPA's estimate of the time of the announcement so we can let OAR know).

Thanks,

Steph

From: Flaharty, Stephanie
Sent: Wednesday, June 01, 2016 10:03 AM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Burneson, Eric <burneson.eric@epa.gov>
Subject: FW: PAG text questions

Done.

From: Flaharty, Stephanie
Sent: Wednesday, June 01, 2016 9:52 AM
To: Sandy Evalenko <Evalenko.Sandy@epa.gov>
Cc: Arrigoni, Holly <Arrigoni.Holly@epa.gov>; Wanda Fields <Fields.Wanda@epa.gov>; Jones-Coleman, Diane <Jones-Coleman.Diane@epa.gov>
Subject: FW: PAG text questions

Hi Sandy,

As, I mentioned yesterday, Joel has provided comments on the subject FR notice. See below for our response and his confirmation to incorporate our changes (just two sentences – see below) on pages 6 and 8.

The attached files are for Wanda or Diane to enter into CMS. I'll give the hard copy of the revised notice and the mark-up to Holly to make sure Joel gets it.

Thanks,

Steph

From: Burneson, Eric
Sent: Tuesday, May 31, 2016 6:13 PM
To: Christ, Lisa <Christ.Lisa@epa.gov>
Cc: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>
Subject: Fwd: PAG text questions

Confirmation that Joel wants those changes incorporated. Can you please make that happen for him to sign on Friday?

Sent from my iPhone

Begin forwarded message:

> **From:** "Beauvais, Joel" <Beauvais.Joel@epa.gov>
> **Date:** May 31, 2016 at 6:07:32 PM EDT
> **To:** "Burneson, Eric" <Burneson.Eric@epa.gov>, "Grevatt, Peter" <Grevatt.Peter@epa.gov>
> **Cc:** "Campbell, Ann" <Campbell.Ann@epa.gov>
> **Subject: RE: PAG text questions**
>
> Thanks, Eric - it would be great if we could make those tweaks and replace the copy I have, then I can sign when back in the office on Friday. On the schedule, let's plan to set a schedule and I'll connect directly with Mathy and Laura at the appropriate times to work on managing timing both of the internal process and the OMB review. I will be meeting with Gina and Laura soon on schedules for various actions, so it would be good to have that in advance of that mtg.

Joel

From: Burneson, Eric
Sent: Tuesday, May 31, 2016 6:03 PM
To: Beauvais, Joel <Beauvais.Joel@epa.gov>; Grevatt, Peter <Grevatt.Peter@epa.gov>
Subject: RE: PAG text questions

Joel: The following are responses to your questions about text in the FRN announcing the draft Drinking Water PAG.

•□□□□□□□□ Regarding Page 8: The term "defer" was chosen to reflect Stakeholders comment that EPA should defer action on the PAG and base its emergency response measures on the MCL rather than the PAGs. We agree it would be more clear to replace the word "defer" with "base" in the FRN.

•□□□□□□□□ Regarding Page 6: Yes the point of the sentence is to convey the expectation that water systems are not exempted from the radionuclides NPDWR and that we expect them to take actions to return to compliance. The following revision may better convey that point. "EPA expects that any drinking water system adversely impacted during a radiation incident will take action to return compliance with MCLs as soon as practicable." Also please note we that chose the word "practicable" over "feasible" (the term used in SDWA 1414 a.(1).A.ii) to reflect the fact that it may be feasible to return to compliance in an emergency however there may be other more pressing public health priorities which make it impractical.

Please let us know if you would like for us to incorporate the changes above into the FRN.

Regarding issuance of a final PAG by the end of the year, the critical factors that influence our schedule are:

1. Commencing and completing the comment period ASAP.

2. Minimizing the changes that are made to the PAG from proposal to final

3. Assuring rapid and constructive feedback from key intra agency partners (i.e., OLEM)

4. Assuring rapid and focused review from OMB.

Eric Burneson, P.E.

Director of Standards and Risk Management

Office of Ground Water and Drinking Water

US Environmental Protection Agency

Phone: 202-564-5250

Fax: 202 564 3760

From: Beauvais, Joel
Sent: Tuesday, May 31, 2016 1:45 PM
To: Grevatt, Peter <Grevatt.Peter@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>
Subject: PAG text questions

Eric, Peter – I just wanted to ask about a couple sentences in the draft PAG FRN that I wasn't sure about. Not a big deal, but I couldn't tell whether these involved typos or I'm missing something . . .

Page 8: ". . . and urged EPA to defer any emergency response measures regarding drinking water solely on the NPDWR . . ." Is that a correct use of the word defer? Do we mean "base" or "predicate"?

Page 6: "EPA assumes that any drinking water system adversely impacted during a radiation incident will be able to achieve compliance with MCLs as soon as practicable." That sounds like a circular statement (they'll be able to comply as soon as they're able). Did we mean to say that we assume they will endeavor to achieve compliance as soon as practicable or something like that?

P.S. The Administrator circled back to once again underscore her desire that we get this done before the end of the year, so please let me know what we need to do to make that happen.

6560-50-P

ENVIRONMENTAL PROTECTION AGENCY

[EPA-HQ-OAR-2007-0268; FRL- -]

Notice of Availability: Draft Protective Action Guide (PAG) for Drinking Water after a Radiological Incident

AGENCY: Environmental Protection Agency (EPA).

ACTION: Notice of Document Availability; Request for Public Comment.

SUMMARY: As part of its mission to protect human health and the environment, the Environmental Protection Agency publishes protective action guides to help federal, state, local and tribal emergency response officials make radiation protection decisions during emergencies. EPA, in coordination with a multi-agency working group within the Federal Radiological Preparedness Coordinating Committee, is proposing an addition to the 2013 revised interim Protective Action Guides and Planning Guidance for Radiological Incidents ("2013 revised PAG Manual" hereafter) to provide guidance on drinking water. The Draft Protective Action Guide for Drinking Water is now available in the EPA Docket, under ID No. **EPA-HQ-OAR-2007-0268**, and EPA is requesting comment on the draft guide.

DATES: Comments must be received on or before [insert date], 45 days after date of publication in the Federal Register.

ADDRESSES: Submit your comments, identified by Docket ID No. **EPA-HQ-OAR-2007-0268,** to the *Federal eRulemaking Portal:* http://www.regulations.gov. Follow the online instructions for submitting comments. Once submitted, comments cannot be edited or withdrawn. The EPA may publish any comment received to its public docket. Do not submit electronically any information you consider to be Confidential Business Information (CBI) or

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other information whose disclosure is restricted by statute. Multimedia submissions (audio, video, etc.) must be accompanied by a written comment. The written comment is considered the official comment and should include discussion of all points you wish to make. The EPA will generally not consider comments or comment contents located outside of the primary submission (i.e. on the web, cloud, or other file sharing system). For additional submission methods, the full EPA public comment policy, information about CBI or multimedia submissions, and general guidance on making effective comments, please visit http://www2.epa.gov/dockets/commenting-epa-dockets.

FOR FURTHER INFORMATION CONTACT: Lisa M. Christ, Standards and Risk Management Division, Office of Ground Water and Drinking Water , Mail Code 4607M, U.S. Environmental Protection Agency, 1200 Pennsylvania Avenue NW, Washington, DC 20460; telephone number: (202) 564-8354; fax number: (202) 564-3758; E-mail: *christ.lisa@epa.gov*.

SUPPLEMENTARY INFORMATION:

1. General Information

A. Does this Action Apply to me?

This action does not impose any requirements on anyone. It notifies interested parties of EPA's proposed, draft drinking water protective action guide (PAG) and requests public comment. The drinking water PAG will help federal, state, local, tribal officials and public water systems make decisions about use of water during radiological emergencies. The drinking water PAG is non-regulatory guidance.

B. What authority does EPA have to provide Protective Action Guidance?

The historical and legal basis of EPA's role in the 2013 PAG Manual begins with Reorganization Plan No. 3 of 1970, in which the Administrator of the EPA assumed all the

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functions of the Federal Radiation Council (FRC), including the charge to "…advise the President with respect to radiation matters, directly or indirectly affecting health, including guidance for all federal agencies in the formulation of radiation standards and in the establishment and execution of programs of cooperation with [s]tates." (Reorg. Plan No. 3 of 1970, sec. 2(a) (7), 6(a) (2); § 274.h of the Atomic Energy Act of 1954, as amended (AEA), codified at 42 U.S.C. § 2021(h)). Recognizing this role, the Federal Emergency Management Agency (FEMA) directed EPA, in its Radiological Emergency Planning and Preparedness Regulations, to "establish Protective Action Guides (PAGs) for all aspects of radiological emergency planning in coordination with appropriate federal agencies." (44 CFR 351.22(a)). FEMA also tasked EPA with preparing "guidance for state and local governments on implementing PAGs, including recommendations on protective actions which can be taken to mitigate the potential radiation dose to the population."(44 CFR 351.22(b)). All of this information was to "be presented in the Environmental Protection Agency (EPA) 'Manual of Protective Action Guides and Protective Actions for Nuclear Incidents.'"(44 CFR 351.22(b)).

Additionally, section 2021(h) charged the Administrator with performing "such other functions as the President may assign to him [or her] by Executive Order." Executive Order 12656 states that the Administrator shall "[d]evelop, for national security emergencies, guidance on acceptable emergency levels of nuclear radiation…." (Executive Order No. 12656, sec. 1601(2)). EPA's role in PAGs development was reaffirmed by the National Response Framework, Nuclear/Radiological Incident Annex of June 2008.

C. What is the PAG Manual: Protective Action Guides and Planning Guidance for Radiological Incidents?

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In 2013, EPA revised the PAG Manual to provide federal, state and local emergency management officials with guidance for responding to radiological emergencies (78 FR 22257, April 15, 2013). See the 2013 PAG Manual at https://www.epa.gov/radiation/protective-action-guides-pags. A protective action guide (PAG) is the projected dose to an individual from a release of radioactive material at which a specific protective action to reduce or avoid that dose is recommended. Emergency management officials use PAGs for making decisions regarding actions to protect the public from exposure to radiation during an emergency. Such actions include evacuation, shelter-in-place, temporary relocation, water and food restrictions.

The PAGs are based on the following essential principles, which also apply to the selection of any protective action during an incident:

- Prevent acute effects.
- Balance protection with other important factors and ensure that actions result in more benefit than harm.
- Reduce risk of chronic effects.

The PAG Manual is not a legally binding regulation or standard and does not supersede any environmental laws; PAGs are not intended to define "safe" or "unsafe" levels of exposure or contamination. As indicated by the use of non-mandatory language such as "may," "should" and "can," the Manual only provides recommendations and does not confer any legal rights or impose any legally binding requirements upon any member of the public, states or any federal agency. Rather, the PAG Manual provides projected radiation dose levels at which specific actions are recommended in order to reduce or avoid that dose. The 2013 revised interim PAG Manual is designed to provide flexibility to be more or less restrictive as deemed appropriate by decision makers based on the unique characteristics of the incident and the local situation.

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D. What additional guidance is being proposed for the PAG Manual?

The draft drinking water protective action guidance was developed by a multi-agency PAG Subcommittee of the Federal Radiological Preparedness Coordinating Committee and is published by the EPA with concurrence from the Department of Energy, the Department of Defense, the Department of Homeland Security (DHS), including the Federal Emergency Management Agency, the Nuclear Regulatory Commission, the Department of Health and Human Services, including both the Centers for Disease Control and Prevention and the Food and Drug Administration (FDA), the U.S. Department of Agriculture and the Department of Labor.

A large scale radiation contamination incident could impact the United States, driving the need for a pre-established drinking water PAG. EPA is proposing a two-tiered intermediate phase drinking water PAG of 100 mrem projected dose in the first year for infants, children and pregnant or nursing women and 500 mrem projected dose in the first year for the general population. The proposed PAG is designed to work in concert with the other Protective Action Guides currently in place for other media in the intermediate phase (i.e., the Food and Drug Administration's 500 mrem PAG for ingestion of food) and provides an additional level of protection for the most sensitive life stages. Authorities have flexibility on how to apply the PAG. In some cases they may find it prudent to use a single PAG (e.g., 100 mrem) as a target for the whole population, while in other circumstances, authorities may find that it makes sense to use both targets simultaneously. For example, emergency managers can use a two-tiered approach to focus on protecting the most sensitive population with limited, alternate water resources. Because the water and food PAGs are designed to be used in concert, the appropriate protective actions will be influenced by the exposure scenario and factors that influence the

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viability of alternative approaches to reducing that dose.

This proposed, additional draft guidance recommends protective actions when drinking water may be impacted by a radiological or nuclear incident. The two-tier approach seeks to balance the goal of keeping radiation doses as low as possible with the practical and logistical challenges of providing alternative drinking water during the response to a disaster. EPA has included examples of estimated costs for selected drinking water protective actions in the Docket, ID No. **EPA-HQ-OAR-2007-0268**. In developing the drinking water PAG, the Agency considered potential cumulative exposure from a radiation incident. Ultimately, a PAG does not represent an "acceptable" routine exposure; a PAG is a dose at which protective action is advised in order to reduce or avoid that dose. Every PAG is developed with the same three principles: prevent acute effects, balance protection with other important factors and ensure that actions result in more benefit than harm, and reduce risk of chronic effects. Emergency management officials should consider all exposure routes when making protective action decisions in an emergency.

Under the Safe Drinking Water Act (SDWA), the Agency has established maximum contaminant levels (MCLs) for radiological contaminants in drinking water. The National Primary Drinking Water Regulations (NPDWR) for radionuclides are based on lifetime exposure criteria and assume 70 years of continued exposure to contaminants in drinking water. While the SDWA framework is appropriate for day-to-day normal operations, it may not provide the necessary tools to assist emergency responders with determining the need for an immediate protective action. EPA expects that any drinking water system adversely impacted during a radiation contamination incident will take action to return to compliance with MCLs as soon as practicable.

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E. How were comments received on the 2013 draft PAG Manual considered in developing this proposal?

On April 15, 2013, EPA published a Federal Register notice requesting public comments on the appropriateness of developing and incorporating a drinking water PAG in the revised PAG Manual (78 FR 22257).

Regarding the specific issue of drinking water, the Agency received about 50 comment letters from members of the public, state and local emergency response and health organizations, environmental advocates, industry associations, organizations opposed to nuclear power, and from national and international radiation protection organizations.

Several commenters from state emergency management agencies and radiation control programs expressed an urgent need for EPA to establish a drinking water PAG, pointing out that drinking water is the only media not currently addressed in the PAG Manual. Commenters stated that a drinking water PAG is a critical aspect of a coordinated emergency response after a radiation contamination incident.

Commenters representing states agencies from Ohio, Kansas, Pennsylvania, Illinois and Washington suggested that a drinking water PAG should be established at the 500 mrem level, to be consistent with the FDA food PAG and with the DHS guidance[1] for water. While EPA agrees with the need of establishing a drinking water PAG, which is consistent with currently available guidance, it is also important to note that EPA believes that when possible, PAG recommendations should provide an additional level of protection to sensitive life-stages. For short-term incidents, it is appropriate to consider a lower tier PAG level of 100 mrem for sensitive life-stages including pregnant women, nursing women and children 15 years old and

[1] Guidance established by the Department of Homeland Security as an intermediate-level PAG for drinking water interdiction (73 FR 45029, April 1, 2008).

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under. This approach of setting a two-tier level of protection incorporates suggestions submitted by commenters regarding the adequate consideration of children and sensitive subpopulations. There is an abundant precaution built into the derivation of the drinking water PAG through a variety of assumptions, including amount of water consumed, exposure duration and dose-response modeling, using the dose-response for the most sensitive life stages to derive the PAG for children through age 15 years. Today's proposal ensures that protective measures are appropriate for all members of the public, including sensitive subpopulations.

In contrast, several commenters from environmental protection advocate organizations suggested that a drinking water PAG is not needed, and urged EPA to base any emergency response measures regarding drinking water solely on the NPDWR for Radionuclides MCLs. Some commenters expressed concerns that establishing a drinking water PAG would weaken existing environmental standards and regulations. However, the drinking water standards are legal limits designed to prevent health effects from everyday exposure to low levels of radiation over long periods and they are not changing with this proposal.

Estimated risk of excess cancer cases for lifetime exposure (70 years) to radioactive contaminants in drinking water at 4 mrem/yr (the MCL) generally falls in a range of risks deemed acceptable by the Agency's regulations. Estimated risks associated with a shorter (one year) exposure to radioactivity in drinking water at the proposed PAG levels fall within a similar range. Emergency guides are temporary measures to minimize risk while enabling prioritization of limited resources during an emergency response.

The PAG levels are guidance for emergency situations; they do not supplant any standards or regulations, nor do they affect the stringency or enforcement of any standards or regulations. The PAG levels are intended to be used only in an emergency when radiation levels have already

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exceeded environmental standards. EPA expects that any drinking water system adversely impacted during a radiation incident will take action to return to compliance with Safe Drinking Water Act levels as soon as practicable.

F. When will the PAG Manual be finalized?

Once comments on this proposed, additional draft action have been addressed, EPA will add drinking water guidance to the full PAG Manual, which will then be issued in final form for incorporation into state, local, tribal and federal emergency response plans over a one-year implementation timeframe.

G. What Should I Consider as I Prepare My Comments for EPA?

When submitting comments, remember to:

- Identify the rulemaking by docket number, subject heading, Federal Register date and page number.
- Follow directions—the EPA may ask you to respond to specific questions or organize comments by referencing the chapter number of the draft action guide
- Explain why you agree or disagree; suggest alternatives and substitute language for your requested changes.
- Describe any assumptions and provide technical information and data that you used.
- If you estimate potential costs or burdens, explain how you arrived at your estimate in sufficient detail to allow it to be reproduced.
- Illustrate your concerns with specific examples and suggest alternatives.
- Explain your views as clearly as possible, avoiding the use of profanity or personal threats.
- Make sure to submit your comments by the comment period deadline identified.

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H. What Specific Comments are Being Sought?

While all comments regarding any aspect of the draft drinking water PAG guidance will be considered, please comment on the following issues specifically:

- Please comment on the appropriateness of the drinking water PAG and the guidance for advance planning.
- Please comment on what implementation challenges might be associated with the two-tiered approach to the water PAG that EPA should consider, and suggest additional guidance that would be helpful.
- Please comment on whether (and if so why) EPA should reconsider using a single-tier drinking water PAG rather than tiered approach proposed in the draft action guide.
- Please suggest additional guidance that would aid pre-incident planning and implementation specific to your community's drinking water systems.
- Please comment on how this guidance should be implemented in emergency response and recovery plans at all levels of government, including considerations for public communications during an emergency.

In the future, calculations and derived response levels will be provided in the Federal Radiological Monitoring and Assessment Center (FRMAC) Assessment Manuals. Emergency planners are referred to FRMAC Monitoring and Sampling Methods to assess surface and drinking water impacts from a radiological emergency. See the Assessment and Monitoring &

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Sampling folders at http://www.nv.doe.gov/nationalsecurity/homelandsecurity/frmac/manuals.aspx. After considering public comments, EPA intends to issue a final PAG Manual, which will supersede the 1992 PAG Manual and the 2013 revised PAG Manual.

Dated: June 3, 2016.

Joel Beauvais,

Deputy Assistant Administrator, Office of Water.

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To: Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]
Cc: Christ, Lisa[Christ.Lisa@epa.gov]; Burneson, Eric[Burneson.Eric@epa.gov]
From: Flaharty, Stephanie
Sent: Wed 6/1/2016 2:03:11 PM
Subject: FW: PAG text questions
EPA Drinking Water PAG FR Notice 6-1-16r.docx
EPA Drinking Water PAG FR Notice 6-1-16 shq.docx

Done.

From: Flaharty, Stephanie
Sent: Wednesday, June 01, 2016 9:52 AM
To: Sandy Evalenko <Evalenko.Sandy@epa.gov>
Cc: Arrigoni, Holly <Arrigoni.Holly@epa.gov>; Wanda Fields <Fields.Wanda@epa.gov>; Jones-Coleman, Diane <Jones-Coleman.Diane@epa.gov>
Subject: FW: PAG text questions

Hi Sandy,

As, I mentioned yesterday, Joel has provided comments on the subject FR notice. See below for our response and his confirmation to incorporate our changes (just two sentences – see below) on pages 6 and 8.

The attached files are for Wanda or Diane to enter into CMS. I'll give the hard copy of the revised notice and the mark-up to Holly to make sure Joel gets it.

Thanks,

Steph

From: Burneson, Eric
Sent: Tuesday, May 31, 2016 6:13 PM

To: Christ, Lisa <Christ.Lisa@epa.gov>
Cc: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>
Subject: Fwd: PAG text questions

Confirmation that Joel wants those changes incorporated. Can you please make that happen for him to sign on Friday?

Sent from my iPhone

Begin forwarded message:

> **From:** "Beauvais, Joel" <Beauvais.Joel@epa.gov>
> **Date:** May 31, 2016 at 6:07:32 PM EDT
> **To:** "Burneson, Eric" <Burneson.Eric@epa.gov>, "Grevatt, Peter" <Grevatt.Peter@epa.gov>
> **Cc:** "Campbell, Ann" <Campbell.Ann@epa.gov>
> **Subject: RE: PAG text questions**
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> Thanks, Eric - it would be great if we could make those tweaks and replace the copy I have, then I can sign when back in the office on Friday. On the schedule, let's plan to set a schedule and I'll connect directly with Mathy and Laura at the appropriate times to work on managing timing both of the internal process and the OMB review. I will be meeting with Gina and Laura soon on schedules for various actions, so it would be good to have that in advance of that mtg.
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> Joel
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> **Sent:** Tuesday, May 31, 2016 6:03 PM
> **To:** Beauvais, Joel <Beauvais.Joel@epa.gov>; Grevatt, Peter <Grevatt.Peter@epa.gov>
> **Subject:** RE: PAG text questions
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Please let us know if you would like for us to incorporate the changes above into the FRN.

Regarding issuance of a final PAG by the end of the year, the critical factors that influence our schedule are:

1. Commencing and completing the comment period ASAP.

2. Minimizing the changes that are made to the PAG from proposal to final

3. Assuring rapid and constructive feedback from key intra agency partners (i.e., OLEM)

4. Assuring rapid and focused review from OMB.

Eric Burneson, P.E.

Director of Standards and Risk Management

Office of Ground Water and Drinking Water

US Environmental Protection Agency

Phone: 202-564-5250

Fax: 202 564 3760

From: Beauvais, Joel
Sent: Tuesday, May 31, 2016 1:45 PM
To: Grevatt, Peter <Grevatt.Peter@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>
Subject: PAG text questions

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P.S. The Administrator circled back to once again underscore her desire that we get this done before the end of the year, so please let me know what we need to do to make that happen.

To: Flaharty, Stephanie[Flaharty.Stephanie@epa.gov]
Cc: Christ, Lisa[Christ.Lisa@epa.gov]; Burneson, Eric[Burneson.Eric@epa.gov]
From: Hernandez-Quinones, Samuel
Sent: Wed 6/1/2016 1:24:37 PM
Subject: RE: PAG text questions
EPA Drinking Water PAG FR Notice 6-1-16 shq.docx

Hi Steph,

Attached is the red-line strikeout version of the PAGs FRN that incorporates Joel's comments. Lisa reviewed and approved the changes.

We would appreciate if you forward the official copy to us once you incorporate these edits.

Thank You

Sam

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water

Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

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6560-50-P

ENVIRONMENTAL PROTECTION AGENCY

[EPA-HQ-OAR-2007-0268; FRL- -]

Notice of Availability: Draft Protective Action Guide (PAG) for Drinking Water after a Radiological Incident

AGENCY: Environmental Protection Agency (EPA).

ACTION: Notice of Document Availability; Request for Public Comment.

SUMMARY: As part of its mission to protect human health and the environment, the Environmental Protection Agency publishes protective action guides to help federal, state, local and tribal emergency response officials make radiation protection decisions during emergencies. EPA, in coordination with a multi-agency working group within the Federal Radiological Preparedness Coordinating Committee, is proposing an addition to the 2013 revised interim Protective Action Guides and Planning Guidance for Radiological Incidents ("2013 revised PAG Manual" hereafter) to provide guidance on drinking water. The Draft Protective Action Guide for Drinking Water is now available in the EPA Docket, under ID No. **EPA-HQ-OAR-2007-0268**, and EPA is requesting comment on the draft guide.

DATES: Comments must be received on or before [insert date], 45 days after date of publication in the Federal Register.

ADDRESSES: Submit your comments, identified by Docket ID No. **EPA-HQ-OAR-2007-0268,** to the *Federal eRulemaking Portal:* http://www.regulations.gov. Follow the online instructions for submitting comments. Once submitted, comments cannot be edited or withdrawn. The EPA may publish any comment received to its public docket. Do not submit electronically any information you consider to be Confidential Business Information (CBI) or

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other information whose disclosure is restricted by statute. Multimedia submissions (audio, video, etc.) must be accompanied by a written comment. The written comment is considered the official comment and should include discussion of all points you wish to make. The EPA will generally not consider comments or comment contents located outside of the primary submission (i.e. on the web, cloud, or other file sharing system). For additional submission methods, the full EPA public comment policy, information about CBI or multimedia submissions, and general guidance on making effective comments, please visit http://www2.epa.gov/dockets/commenting-epa-dockets.

FOR FURTHER INFORMATION CONTACT: Lisa M. Christ, Standards and Risk Management Division, Office of Ground Water and Drinking Water , Mail Code 4607M, U.S. Environmental Protection Agency, 1200 Pennsylvania Avenue NW, Washington, DC 20460; telephone number: (202) 564-8354; fax number: (202) 564-3758; E-mail: *christ.lisa@epa.gov*.

SUPPLEMENTARY INFORMATION:

1. General Information

A. Does this Action Apply to me?

This action does not impose any requirements on anyone. It notifies interested parties of EPA's proposed, draft drinking water protective action guide (PAG) and requests public comment. The drinking water PAG will help federal, state, local, tribal officials and public water systems make decisions about use of water during radiological emergencies. The drinking water PAG is non-regulatory guidance.

B. What authority does EPA have to provide Protective Action Guidance?

The historical and legal basis of EPA's role in the 2013 PAG Manual begins with Reorganization Plan No. 3 of 1970, in which the Administrator of the EPA assumed all the

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functions of the Federal Radiation Council (FRC), including the charge to "…advise the President with respect to radiation matters, directly or indirectly affecting health, including guidance for all federal agencies in the formulation of radiation standards and in the establishment and execution of programs of cooperation with [s]tates." (Reorg. Plan No. 3 of 1970, sec. 2(a) (7), 6(a) (2); § 274.h of the Atomic Energy Act of 1954, as amended (AEA), codified at 42 U.S.C. § 2021(h)). Recognizing this role, the Federal Emergency Management Agency (FEMA) directed EPA, in its Radiological Emergency Planning and Preparedness Regulations, to "establish Protective Action Guides (PAGs) for all aspects of radiological emergency planning in coordination with appropriate federal agencies." (44 CFR 351.22(a)). FEMA also tasked EPA with preparing "guidance for state and local governments on implementing PAGs, including recommendations on protective actions which can be taken to mitigate the potential radiation dose to the population."(44 CFR 351.22(b)). All of this information was to "be presented in the Environmental Protection Agency (EPA) 'Manual of Protective Action Guides and Protective Actions for Nuclear Incidents.'"(44 CFR 351.22(b)).

Additionally, section 2021(h) charged the Administrator with performing "such other functions as the President may assign to him [or her] by Executive Order." Executive Order 12656 states that the Administrator shall "[d]evelop, for national security emergencies, guidance on acceptable emergency levels of nuclear radiation…." (Executive Order No. 12656, sec. 1601(2)). EPA's role in PAGs development was reaffirmed by the National Response Framework, Nuclear/Radiological Incident Annex of June 2008.

C. What is the PAG Manual: Protective Action Guides and Planning Guidance for Radiological Incidents?

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In 2013, EPA revised the PAG Manual to provide federal, state and local emergency management officials with guidance for responding to radiological emergencies (78 FR 22257, April 15, 2013). See the 2013 PAG Manual at https://www.epa.gov/radiation/protective-action-guides-pags. A protective action guide (PAG) is the projected dose to an individual from a release of radioactive material at which a specific protective action to reduce or avoid that dose is recommended. Emergency management officials use PAGs for making decisions regarding actions to protect the public from exposure to radiation during an emergency. Such actions include evacuation, shelter-in-place, temporary relocation, water and food restrictions.

The PAGs are based on the following essential principles, which also apply to the selection of any protective action during an incident:

- Prevent acute effects.
- Balance protection with other important factors and ensure that actions result in more benefit than harm.
- Reduce risk of chronic effects.

The PAG Manual is not a legally binding regulation or standard and does not supersede any environmental laws; PAGs are not intended to define "safe" or "unsafe" levels of exposure or contamination. As indicated by the use of non-mandatory language such as "may," "should" and "can," the Manual only provides recommendations and does not confer any legal rights or impose any legally binding requirements upon any member of the public, states or any federal agency. Rather, the PAG Manual provides projected radiation dose levels at which specific actions are recommended in order to reduce or avoid that dose. The 2013 revised interim PAG Manual is designed to provide flexibility to be more or less restrictive as deemed appropriate by decision makers based on the unique characteristics of the incident and the local situation.

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D. What additional guidance is being proposed for the PAG Manual?

The draft drinking water protective action guidance was developed by a multi-agency PAG Subcommittee of the Federal Radiological Preparedness Coordinating Committee and is published by the EPA with concurrence from the Department of Energy, the Department of Defense, the Department of Homeland Security (DHS), including the Federal Emergency Management Agency, the Nuclear Regulatory Commission, the Department of Health and Human Services, including both the Centers for Disease Control and Prevention and the Food and Drug Administration (FDA), the U.S. Department of Agriculture and the Department of Labor.

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Commenters representing states agencies from Ohio, Kansas, Pennsylvania, Illinois and Washington suggested that a drinking water PAG should be established at the 500 mrem level, to be consistent with the FDA food PAG and with the DHS guidance[1] for water. While EPA agrees with the need of establishing a drinking water PAG, which is consistent with currently available guidance, it is also important to note that EPA believes that when possible, PAG recommendations should provide an additional level of protection to sensitive life-stages. For short-term incidents, it is appropriate to consider a lower tier PAG level of 100 mrem for sensitive life-stages including pregnant women, nursing women and children 15 years old and

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under. This approach of setting a two-tier level of protection incorporates suggestions submitted by commenters regarding the adequate consideration of children and sensitive subpopulations. There is an abundant precaution built into the derivation of the drinking water PAG through a variety of assumptions, including amount of water consumed, exposure duration and dose-response modeling, using the dose-response for the most sensitive life stages to derive the PAG for children through age 15 years. Today's proposal ensures that protective measures are appropriate for all members of the public, including sensitive subpopulations.

In contrast, several commenters from environmental protection advocate organizations suggested that a drinking water PAG is not needed, and urged EPA to base any emergency response measures regarding drinking water solely on the NPDWR for Radionuclides MCLs. Some commenters expressed concerns that establishing a drinking water PAG would weaken existing environmental standards and regulations. However, the drinking water standards are legal limits designed to prevent health effects from everyday exposure to low levels of radiation over long periods and they are not changing with this proposal.

Estimated risk of excess cancer cases for lifetime exposure (70 years) to radioactive contaminants in drinking water at 4 mrem/yr (the MCL) generally falls in a range of risks deemed acceptable by the Agency's regulations. Estimated risks associated with a shorter (one year) exposure to radioactivity in drinking water at the proposed PAG levels fall within a similar range. Emergency guides are temporary measures to minimize risk while enabling prioritization of limited resources during an emergency response.

The PAG levels are guidance for emergency situations; they do not supplant any standards or regulations, nor do they affect the stringency or enforcement of any standards or regulations. The PAG levels are intended to be used only in an emergency when radiation levels have already

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exceeded environmental standards. EPA expects that any drinking water system adversely impacted during a radiation incident will take action to return to compliance with Safe Drinking Water Act levels as soon as practicable.

F. When will the PAG Manual be finalized?

Once comments on this proposed, additional draft action have been addressed, EPA will add drinking water guidance to the full PAG Manual, which will then be issued in final form for incorporation into state, local, tribal and federal emergency response plans over a one-year implementation timeframe.

G. What Should I Consider as I Prepare My Comments for EPA?

When submitting comments, remember to:

- Identify the rulemaking by docket number, subject heading, Federal Register date and page number.
- Follow directions—the EPA may ask you to respond to specific questions or organize comments by referencing the chapter number of the draft action guide
- Explain why you agree or disagree; suggest alternatives and substitute language for your requested changes.
- Describe any assumptions and provide technical information and data that you used.
- If you estimate potential costs or burdens, explain how you arrived at your estimate in sufficient detail to allow it to be reproduced.
- Illustrate your concerns with specific examples and suggest alternatives.
- Explain your views as clearly as possible, avoiding the use of profanity or personal threats.

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- Make sure to submit your comments by the comment period deadline identified.

H. What Specific Comments are Being Sought?

While all comments regarding any aspect of the draft drinking water PAG guidance will be considered, please comment on the following issues specifically:

- Please comment on the appropriateness of the drinking water PAG and the guidance for advance planning.
- Please comment on what implementation challenges might be associated with the two-tiered approach to the water PAG that EPA should consider, and suggest additional guidance that would be helpful.
- Please comment on whether (and if so why) EPA should reconsider using a single-tier drinking water PAG rather than tiered approach proposed in the draft action guide.
- Please suggest additional guidance that would aid pre-incident planning and implementation specific to your community's drinking water systems.
- Please comment on how this guidance should be implemented in emergency response and recovery plans at all levels of government, including considerations for public communications during an emergency.

In the future, calculations and derived response levels will be provided in the Federal Radiological Monitoring and Assessment Center (FRMAC) Assessment Manuals. Emergency planners are referred to FRMAC Monitoring and Sampling Methods to assess surface and drinking water impacts from a radiological emergency. See the Assessment and Monitoring &

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Sampling folders at http://www.nv.doe.gov/nationalsecurity/homelandsecurity/frmac/manuals.aspx. After considering public comments, EPA intends to issue a final PAG Manual, which will supersede the 1992 PAG Manual and the 2013 revised PAG Manual.

Dated:

Joel Beauvais,

Deputy Assistant Administrator, Office of Water.

ED_001057_00005503

To: Christ, Lisa[Christ.Lisa@epa.gov]
Cc: Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]; Flaharty, Stephanie[Flaharty.Stephanie@epa.gov]
From: Burneson, Eric
Sent: Tue 5/31/2016 10:13:06 PM
Subject: Fwd: PAG text questions

Confirmation that Joel wants those changes incorporated. Can you please make that happen for him to sign on Friday?

Sent from my iPhone

Begin forwarded message:

From: "Beauvais, Joel" <Beauvais.Joel@epa.gov>
Date: May 31, 2016 at 6:07:32 PM EDT
To: "Burneson, Eric" <Burneson.Eric@epa.gov>, "Grevatt, Peter" <Grevatt.Peter@epa.gov>
Cc: "Campbell, Ann" <Campbell.Ann@epa.gov>
Subject: RE: PAG text questions

Thanks, Eric - it would be great if we could make those tweaks and replace the copy I have, then I can sign when back in the office on Friday. On the schedule, let's plan to set a schedule and I'll connect directly with Mathy and Laura at the appropriate times to work on managing timing both of the internal process and the OMB review. I will be meeting with Gina and Laura soon on schedules for various actions, so it would be good to have that in advance of that mtg.

Joel

From: Burneson, Eric
Sent: Tuesday, May 31, 2016 6:03 PM
To: Beauvais, Joel <Beauvais.Joel@epa.gov>; Grevatt, Peter <Grevatt.Peter@epa.gov>
Subject: RE: PAG text questions

Joel: The following are responses to your questions about text in the FRN announcing the draft Drinking Water PAG.

•□□□□□□□□ Regarding Page 8: The term “defer” was chosen to reflect Stakeholders comment that EPA should defer action on the PAG and base its emergency response measures on the MCL rather than the PAGs. We agree it would be more clear to replace the word “defer” with “base” in the FRN.

•□□□□□□□□ Regarding Page 6: Yes the point of the sentence is to convey the expectation that water systems are not exempted from the radionuclides NPDWR and that we expect them to take actions to return to compliance. The following revision may better convey that point. “EPA expects that any drinking water system adversely impacted during a radiation incident will take action to return compliance with MCLs as soon as practicable.” Also please note we that chose the word “practicable” over “feasible” (the term used in SDWA 1414 a.(1).A.ii) to reflect the fact that it may be feasible to return to compliance in an emergency however there may be other more pressing public health priorities which make it impractical.

Please let us know if you would like for us to incorporate the changes above into the FRN.

Regarding issuance of a final PAG by the end of the year, the critical factors that influence our schedule are:

1. Commencing and completing the comment period ASAP.

2. Minimizing the changes that are made to the PAG from proposal to final

3. Assuring rapid and constructive feedback from key intra agency partners (i.e., OLEM)

4. Assuring rapid and focused review from OMB.

Eric Burneson, P.E.

Director of Standards and Risk Management

Office of Ground Water and Drinking Water

US Environmental Protection Agency

Phone: 202-564-5250

Fax: 202 564 3760

From: Beauvais, Joel
Sent: Tuesday, May 31, 2016 1:45 PM
To: Grevatt, Peter <Grevatt.Peter@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>
Subject: PAG text questions

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P.S. The Administrator circled back to once again underscore her desire that we get this done before the end of the year, so please let me know what we need to do to make that happen.

To: Christ, Lisa[Christ.Lisa@epa.gov]; Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]
Cc: Flaharty, Stephanie[Flaharty.Stephanie@epa.gov]
From: Burneson, Eric
Sent: Tue 5/31/2016 10:04:38 PM
Subject: FW: PAG text questions

Lisa and Sam: Please work with Steph to make the changes in the RADS PAG FRN as described below in my note to Joel

From: Burneson, Eric
Sent: Tuesday, May 31, 2016 6:03 PM
To: Beauvais, Joel <Beauvais.Joel@epa.gov>; Grevatt, Peter <Grevatt.Peter@epa.gov>
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Eric Burneson, P.E.

Director of Standards and Risk Management

Office of Ground Water and Drinking Water

US Environmental Protection Agency

Phone: 202-564-5250

Fax: 202 564 3760

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To: Ellis, Jerry[Ellis.Jerry@epa.gov]; Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]; Wadlington, Christina[Wadlington.Christina@epa.gov]; Christ, Lisa[Christ.Lisa@epa.gov]; Canino, Richard[Canino.Richard@epa.gov]; Millett, John[Millett.John@epa.gov]
From: Nesky, Anthony
Sent: Thur 5/26/2016 10:53:21 PM
Subject: Fw: Inside EPA on proposed water PAG, final Manual in OMB

From: DeCair, Sara
Sent: Wednesday, May 25, 2016 9:06 AM
To: Ferguson, Rafaela; OAR-ORIA-RPD
Cc: Kanevsky, Maria
Subject: Inside EPA on proposed water PAG, final Manual in OMB

I am glad that Phil spotted this! To me it says “Progress” but it’s not an overly flattering article…

Daily News

OMB Advances Controversial EPA Guide For Radiological Emergencies

May 24, 2016

The Obama administration appears to be moving forward with highly controversial drinking water amendments to EPA's protective action guides (PAGs) for radiological emergencies, despite attempts from a host of environmental groups to stop the amendments.

The White House Office of Management & Budget (OMB) approved the amendments addressing drinking water standards for radiological incidents after the agency made revisions to them during the course of interagency review, according to OMB. At press time, it was unclear what revisions EPA made.

The drinking water measure is a proposed chapter in EPA's pending PAG manual for radiological emergencies.

OMB's move May 18 to approve the amendments -- which were in the form of a draft notice of document availability for a proposed drinking water PAG for radiological emergencies -- appears to have prompted EPA on May 19 to forward to OMB its final PAG manual for approval. The rules are separate but related, one informed source

says, noting that the May 18 completed review was for a proposed chapter of the PAG while the May 19 item is for the final PAG manual, not including the already-reviewed drinking water chapter.

When EPA in 2013 issued a draft update to its PAG manual, it did not include a drinking water chapter, but rather sought comment on whether it should develop a short-term drinking water PAG for radiological releases. The controversial 2013 PAG manual, which is in use as interim guidance and is now under OMB review in final form, makes several changes from a 1992 version, including applying the manual to incidents other than just nuclear power plant accidents and incorporating Department of Homeland Security cleanup guidance for improvised nuclear devices. At the time, EPA deferred including drinking water levels.

Then in early December, EPA sent to OMB for interagency review a draft notice of document availability for proposed drinking water PAGs, prompting great concern among several environmental groups.

"EPA [in 2013] published the PAGs without changing the water limits, but indicated it was interested at some time in the future in considering breaching the Safe Drinking Water Act [(SDWA)] limits for PAG purposes," the Natural Resources Defense Council and a host of other environmental and nuclear watchdog groups told OMB in a Dec. 22 letter. The groups said they presumed the proposal sent to OMB in December proposed such breaches, which they said "could result in the public being forced to consume water with concentrations of radionuclides hundreds or even thousands of times higher than considered acceptable under the Safe Drinking Water Act."

Public Outcry

The groups also met with OMB in January, voicing their fears that the proposal would permit a marked increase in the allowable level of radioactive contaminants in drinking water for the intermediate phase after a radiological incident and warning that a public outcry would occur if EPA allowed the public to be exposed to radionuclide concentrations higher than SDWA limits. The intermediate phase, environmentalists note, comes after the immediate phase and can run from a year to several years after a radiological release.

The groups in their meeting with OMB referenced the controversy over EPA's initial handling of the lead in drinking water crisis in Flint, MI, and predicted a similar or worse outcry would occur in response to an EPA proposal allowing radioactive contaminants in drinking water to significantly exceed SDWA limits.

"Who in their right mind would do this in the midst of Flint?" one environmentalist questions in response to EPA's advancement of the PAG manual and drinking water amendments.

The source says the PAG is "an effort to get around anti-backsliding provisions" of SDWA, which bars EPA from promulgating any standards that are less protective than a

maximum contaminant level, a SDWA chemical-specific standard.

EPA in the 2013 *Federal Register* notice on the PAG draft update noted that the manual "is not a legally binding regulation or standard and does not supersede any environmental laws." -- *Suzanne Yohannan* (syohannan@iwpnews.com)

Related News | Toxics | Waste | Water |

191663

From: Egidi, Philip
Sent: Wednesday, May 25, 2016 8:57 AM
To: DeCair, Sara <DeCair.Sara@epa.gov>
Subject: Congratulations

Always good to see someone get a bean!

http://insideepa.com/daily-news/omb-advances-controversial-epa-guide-radiological-emergencies

PVE

Philip Egidi

Environmental Scientist

U.S. Environmental Protection Agency

Radiation Protection Division

Washington, DC

(202) 343-9186 (work)

(970) 209-2885 (Cell)

“The health of the people is the highest law.”

Cicero (106 - 43 BC)

To: Burneson, Eric[Burneson.Eric@epa.gov]; Oshida, Phil[Oshida.Phil@epa.gov]; Christ, Lisa[Christ.Lisa@epa.gov]; Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]; Greene, Ashley[Greene.Ashley@epa.gov]; Wadlington, Christina[Wadlington.Christina@epa.gov]
From: Flaharty, Stephanie
Sent: Thur 5/26/2016 1:44:06 PM
Subject: FW: FR Notice of Availability and Request for Public Comment: Draft Protective Action Guide (PAG) for Drinking Water after a Radiological Incident
PAG Transmittal memo PG to JB 5-25-16.pdf
PAG Proposal - OGC Concurrence 5-26-16.pdf
EPA Drinking Water PAG FR Notice 5-25-16.docx
EPA Drinking Water PAG 5-23-16_final.docx

Peter has signed-off on the package and I've delivered it to OW. Have a good weekend !

From: Flaharty, Stephanie
Sent: Thursday, May 26, 2016 9:17 AM
To: Sandy Evalenko <Evalenko.Sandy@epa.gov>
Cc: Jones-Coleman, Diane <Jones-Coleman.Diane@epa.gov>; Wanda Fields <Fields.Wanda@epa.gov>; Arrigoni, Holly <Arrigoni.Holly@epa.gov>; Gude, Karen <Gude.Karen@epa.gov>
Subject: FR Notice of Availability and Request for Public Comment: Draft Protective Action Guide (PAG) for Drinking Water after a Radiological Incident

Good Morning Sandy,

I am hand carrying the subject PAG package to OW shortly. Attached is the suite of files for your review and CMS records. As we mentioned in an earlier email, we are looking for a signature date of June 6th (for an agency announcement and the posting of the FRN pre-pub).

Thanks,

Steph

MEMORANDUM

SUBJECT: **Draft Protective Action Guide (PAG) for Drinking Water for Radiological Incidents (Tier 3, SAN 5198) – ACTION MEMORANDUM**

FROM: Peter Grevatt
Director, Office of Ground Water and Drinking Water

TO: Joel Beauvais
Deputy Assistant Administrator

PURPOSE
Attached for publication in the *Federal Register* is the notice announcing the availability of the Draft Protective Action Guide for Drinking Water, which is a key addition to the U.S. Environmental Protection Agency's revision of the Protective Action Guides and Planning Guidance for Radiological Incidents (referred to as the PAG Manual). I am requesting that you sign the FR notice, which also announces our request for public comment on the Draft Protection Action Guide for Drinking Water.

The purpose of EPA's PAG Manual is to help federal, state, local and tribal authorities make decisions to protect the public during radiological emergencies.

DEADLINE
After responding to the Fukushima Radiation Release Incident, the agency recognized that it urgently needed to develop additional recommendations to protect the public from radiation in drinking water following a radiological emergency. The Office of Water, in collaboration with the Office of Air and Radiation, are working towards publishing the final PAG Manual, including the drinking water PAG, by the end of the calendar year 2016.

OVERVIEW
A protective action guide is the projected dose to an individual from a release of radioactive material at which a specific protective action to reduce or avoid that dose is recommended. Emergency management officials use PAGs for making decisions regarding actions to protect the public from exposure to radiation during an emergency. Such actions include, but are not limited to, evacuation, shelter-in-place, temporary relocation, access restrictions and food embargos. The PAGs are neither legally binding regulations nor standards and do not supersede any environmental laws or regulations. They are not intended to define "safe" or "unsafe" levels of exposure or contamination. They define the projected radiation doses at which specific actions may be warranted to reduce exposure during the weeks to months following an incident. The PAG Manual provides information and flexibility to decision makers based on the characteristics of the incident and the local situation.

The PAGs are based on the following essential principles, which also apply to the selection of any protective action during an incident:

- prevent acute effects;
- balance protection with other important factors and ensure that actions result in more benefit than harm; and
- reduce risk of chronic effects.

The drinking water PAG consists of a two-tiered, intermediate phase PAG of 100 mrem projected dose in the first year for children 15-years old and under, and nursing or pregnant women, to provide additional protection for the most sensitive life stages; and 500 mrem projected dose in the first year for the general population. The intent of the PAG is to inform decisions to restrict the use of contaminated water for drinking purposes, and to provide alternative drinking water options for the affected community. Options decision makers can consider for providing alternate drinking water could include: bottled water, obtaining a new uncontaminanted water source, installing treatment, interconnection between water systems or a combination of these actions.

Under the Safe Drinking Water Act, the agency has established maximum contaminant levels for radiological contaminants in drinking water. The National Primary Drinking Water Regulations for Radionuclides established a dose-based limit of 4 mrem/year for beta particle and photon radioactivity, based on lifetime exposure criteria, which assume 70 years of continued exposure to contaminants in drinking water. The agency determined that it may not be appropriate to base response measures during short-term emergency incidents on lifetime exposure criteria. While the SDWA framework is appropriate for day-to-day normal operations, it may not provide helpful information to assist emergency responders with determining the need for an immediate protective action. The PAG does not change a water system's requirements to comply with the radionuclides drinking water regulation. The agency assumes that any drinking water system adversely impacted during a radiation incident will be able to achieve compliance with MCLs as soon as practicable.

Regulatory History

The Administrator of the EPA assumed all the functions of the Federal Radiation Council in 1970, including the charge to "…advise the President with respect to radiation matters, directly or indirectly affecting health, including guidance for all federal agencies in the formulation of radiation standards and in the establishment and execution of programs of cooperation with [s]tates." The agency's role in PAG development was reaffirmed by the Federal Emergency Management Agency regulations and the Nuclear/Radiological Incident Annex of the National Response Framework in June 2008.

ANTICIPATED PUBLIC AND STAKEHOLDER RESPONSE

We are anticipating a reaction to this draft proposal similar to that received on the 2013 revised PAG Manual. In general, the intended users of the Manual (including state, local and tribal entities) were positive about the 2013 PAG Manual and will provide helpful suggestions. The drinking water utility associations will provide feedback on further implementation guidance needed for their plans. Some environmental groups will respond that the radiation levels provided in the guidance are not safe (thousands of times greater than SDWA standards), and will state that the PAGs undermine environmental regulations, including the drinking water standards for radionuclides. We are working with OW communications to include messages in outreach materials to help address these concerns.

INTERNAL DEVELOPMENT AND REVIEW PROCESS

This is a Tier 3 action. Through the development of this guidance, my staff have worked closely with

staff from the Office of Air and Radiation. The Office of Water briefed and solicited comments from the

Office of Land and Emergency Management (including the Environmental Response Team and the Consequence Management Advisory Team), the Office of General Counsel (the Air and Radiation Law Office and the Water Law Office) and the Office of Homeland Security. No major issues were identified and the reviewing offices concurred that the document should be published for public review and comment.

INTERAGENCY REVIEW

This action is not subject to Executive Order 12866; however, the Office of Management and Budget was briefed and provided an interagency review. The agency made minor clarifications to the draft action guide based on comments received from OMB during the review, and OMB cleared it for agency action on May 18, 2016.

IMPACTS

The drinking water PAG is not regulatory; however, it does influence regulations of FEMA and the Nuclear Regulatory Commission regarding emergency preparedness near nuclear power plants and for homeland security. Specific statements in the document remind the users that the guidance is flexible, and that incident-specific conditions may warrant using judgment when taking protective actions. This proposed drinking water PAG does not modify existing federal regulations or policies. The drinking water PAG relieves state, local and tribal emergency preparedness entities of the need to independently derive radiation levels at which to take protective actions. The drinking water PAG provides a common platform from which emergency managers may make consistent decisions to protect public health; it raises no environmental justice issues because it applies to all members of the public equally.

The PAG Manual is for temporary measures during radiological emergencies and is not intended to impact site cleanups occurring under other statutory authorities such as the EPA's Superfund program, the Nuclear Regulatory Commission's decommissioning program, or other federal or state cleanup programs.

This proposed addition of the drinking water PAG will make the revised PAG Manual more complete, covering impacts from all exposure pathways during a radiological emergency. Industry, state and professional organizations in the field of radiation protection requested this guidance in their comments on the 2013 PAG Manual revision; this draft guidance is responsive to their concerns.

STAKEHOLDER INVOLVEMENT

The primary users of the PAG Manual are state, local and tribal radiological preparedness organizations. A key audience for this proposed drinking water PAG is the drinking water industry. This draft guidance considers suggestions in comments received in 2013, and provides practical application strategies for emergency managers in state, local and tribal government organizations.

Document development and reviews have been conducted in close cooperation with the following departments and agencies on the PAGs Subcommittee of the Federal Radiological Preparedness Coordinating Committee: the Department of Energy, the Department of Defense, the Department of Homeland Security, including the Federal Emergency Management Agency, the Nuclear Regulatory Commission, the Department of Health and Human Services, including the Centers for Disease Control and Prevention and the Food and Drug Administration, the Department of Agriculture and the Department of Labor.

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STAFF CONTACT
Samuel Hernandez, from the Office of Ground Water and Drinking Water, is the point of contact for questions regarding drinking water; he may be reached at (202) 564-1735. The overall PAG Manual project lead is Sara DeCair, from the Office of Radiation and Indoor Air's Radiation Protection Division. She may be reached at (202) 343-9108.

RECOMMENDATION
Because of the agency's unique responsibility to provide PAGs and the need for consistent emergency preparedness across the United States in light of the Fukushima disaster, I recommend that you approve this action for publication.

Attachments

ED_001057_00005525

To: Grevatt, Peter[Grevatt.Peter@epa.gov]; Osegueda, Carlos[Osegueda.Carlos@epa.gov]; Burneson, Eric[Burneson.Eric@epa.gov]; Oshida, Phil[Oshida.Phil@epa.gov]; Christ, Lisa[Christ.Lisa@epa.gov]; Greene, Ashley[Greene.Ashley@epa.gov]; Wadlington, Christina[Wadlington.Christina@epa.gov]
From: Flaharty, Stephanie
Sent: Wed 5/25/2016 2:16:35 PM
Subject: Inside EPA: OMB Advances Controversial EPA Guide For Radiological Emergencies

OMB Advances Controversial EPA Guide For Radiological Emergencies

May 24, 2016

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The White House Office of Management & Budget (OMB) approved the amendments addressing drinking water standards for radiological incidents after the agency made revisions to them during the course of interagency review, according to OMB. At press time, it was unclear what revisions EPA made.

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Public Outcry

The groups also met with OMB in January, voicing their fears that the proposal would permit a marked increase in the allowable level of radioactive contaminants in drinking water for the intermediate phase after a radiological incident and warning that a public outcry would occur if EPA allowed the public to be exposed to radionuclide concentrations higher than SDWA limits. The intermediate phase, environmentalists note, comes after the immediate phase and can run from a year to several years after a radiological release.

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The source says the PAG is "an effort to get around anti-backsliding provisions" of SDWA, which bars EPA from promulgating any standards that are less protective than a maximum contaminant level, a SDWA chemical-specific standard.

EPA in the 2013 *Federal Register* notice on the PAG draft update noted that the manual "is not a legally binding regulation or standard and does not supersede any environmental laws." -- *Suzanne Yohannan* (syohannan@iwpnews.com)

MEMORANDUM

SUBJECT: **Draft Protective Action Guide (PAG) for Drinking Water for Radiological Incidents (Tier 3, SAN 5198) – ACTION MEMORANDUM**

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Director, Office of Ground Water and Drinking Water

TO: Joel Beauvais
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The purpose of the PAG Manual is to help federal, state, local and tribal authorities make decisions to protect the public during radiological emergencies.

DEADLINE
After responding to the Fukushima Radiation Release Incident, the agency recognized that it urgently needed to develop additional recommendations to protect the public from radiation in drinking water following a radiological emergency. The Office of Water, in collaboration with the Office of Air and Radiation, are working towards publishing the final PAG Manual, including the drinking water PAG, by the end of the calendar year 2016.

OVERVIEW
A protective action guide is the projected dose to an individual from a release of radioactive material at which a specific protective action to reduce or avoid that dose is recommended. Emergency management officials use PAGs for making decisions regarding actions to protect the public from exposure to radiation during an emergency. Such actions include, but are not limited to, evacuation, shelter-in-place, temporary relocation, access restrictions and food embargos. The PAGs are neither legally binding regulations nor standards and do not supersede any environmental laws or regulations. They are not intended to define "safe" or "unsafe" levels of exposure or contamination. They define the projected radiation doses at which specific actions may be warranted to reduce exposure during the weeks to months period following an incident. The PAG Manual provides information and flexibility to decision makers based on the characteristics of the incident and the local situation.

The PAGs are based on the following essential principles, which also apply to the selection of any protective action during an incident:

- prevent acute effects;
- balance protection with other important factors and ensure that actions result in more benefit than harm; and
- reduce risk of chronic effects.

The drinking water PAG consists of a two-tiered, intermediate phase PAG of 100 mrem projected dose in the first year for children 15-years old and under, and nursing or pregnant women; and 500 mrem projected dose in the first year for the general population. The PAG is to inform decisions to restrict the use of contaminated water for drinking purposes, and to provide alternative drinking water for the affected community. Options decision makers can consider for providing alternate drinking water could include: bottled water, obtaining a new uncontaminanted water source, installing treatment, interconnection between water systems or a combination of these actions.

Under the Safe Drinking Water Act, the agency has established maximum contaminant levels for radiological contaminants in drinking water. The National Primary Drinking Water Regulations for Radionuclides established a dose-based limit of 4 mrem/year for beta particle and photon radioactivity, based on lifetime exposure criteria, which assume 70 years of continued exposure to contaminants in drinking water. The agency determined that it may not be appropriate to base response measures during short-term emergency incidents on lifetime exposure criteria. While the SDWA framework is appropriate for day-to-day normal operations, it may not provide helpful information to assist emergency responders with determining the need for an immediate protective action. The PAG does not change a water system's requirements to comply with the radionuclides drinking water regulation. The agency assumes that any drinking water system adversely impacted during a radiation incident will be able to achieve compliance with MCLs as soon as practicable.

Regulatory History
The Administrator of the EPA assumed all the functions of the Federal Radiation Council in 1970, including the charge to "…advise the President with respect to radiation matters, directly or indirectly affecting health, including guidance for all federal agencies in the formulation of radiation standards and in the establishment and execution of programs of cooperation with [s]tates." The agency's role in PAG development was reaffirmed by the Federal Emergency Management Agency regulations and the Nuclear/Radiological Incident Annex of the National Response Framework in June 2008.

ANTICIPATED PUBLIC AND STAKEHOLDER RESPONSE
We are anticipating a reaction to this draft proposal similar to that received on the 2013 revised PAG Manual. In general, the intended users of the Manual (including state, local and tribal entities) were positive about the 2013 PAG Manual and will provide helpful suggestions. The drinking water utility associations will provide feedback on further implementation guidance needed for their plans. Some environmental groups will respond that the radiation levels provided in the guidance are not safe (thousands of times greater than SDWA standards), and will state that the PAGs undermine environmental regulations, including the drinking water standards for radionuclides. We are working with OW communications to include messages in outreach materials to help address these concerns.

INTERNAL DEVELOPMENT AND REVIEW PROCESS
This is a Tier 3 action. Through the development of this guidance, my staff have worked closely with

staff from the Office of Air and Radiation. The Office of Water briefed and solicited comments from the Office of Land and Emergency Management (including the Environmental Response Team and the Consequence Management Advisory Team), the Office of General Counsel (the Air and Radiation Law Office and the Water Law Office) and the Office of Homeland Security. No major issues were identified and the reviewing offices concurred that the document should be published for public review and comment.

INTERAGENCY REVIEW

This action is not subject to Executive Order 12866, however the Office of Management and Budget was briefed and provided an interagency review. The agency considered comments received on the draft action guide and OMB cleared it for agency action on May 18, 2016.

IMPACTS

The drinking water PAG is not regulatory, however, it does influence regulations of FEMA and the Nuclear Regulatory Commission regarding emergency preparedness near nuclear power plants and for homeland security. Specific statements in the document remind the users that the guidance is flexible, and that incident-specific conditions may warrant using judgment when taking protective actions. This proposed drinking water PAG does not modify existing federal regulations or policies. The drinking water PAG relieves state, local and tribal emergency preparedness entities of the need to independently derive radiation levels at which to take protective actions. The drinking water PAG provides a common platform from which emergency managers may make consistent decisions to protect public health; it raises no environmental justice issues because it applies to all members of the public equally.

The PAG Manual is for temporary measures during radiological emergencies and is not intended to impact site cleanups occurring under other statutory authorities such as the EPA's Superfund program, the Nuclear Regulatory Commission's decommissioning program, or other federal or state cleanup programs.

This proposed addition of the drinking water PAG will make the revised PAG Manual more complete, covering impacts from all exposure pathways during a radiological emergency. Industry, state and professional organizations in the field of radiation protection requested this guidance in their comments on the 2013 PAG Manual revision; this draft guidance is responsive to their concerns.

STAKEHOLDER INVOLVEMENT

The primary users of the PAG Manual are state, local and tribal radiological preparedness organizations. A key audience for this proposed drinking water PAG is the drinking water industry. This draft guidance considers suggestions in comments received in 2013, and provides practical application strategies for emergency managers in state, local and tribal government organizations.

Document development and reviews have been conducted in close cooperation with the following departments and agencies on the PAGs Subcommittee of the Federal Radiological Preparedness Coordinating Committee: the Department of Energy, the Department of Defense, the Department of Homeland Security, including the Federal Emergency Management Agency, the Nuclear Regulatory Commission, the Department of Health and Human Services, including the Centers for Disease Control and Prevention and the Food and Drug Administration, the Department of Agriculture and the Department of Labor.

STAFF CONTACT
Samuel Hernandez, from the Office of Ground Water and Drinking Water, is the point of contact for questions regarding drinking water; he may be reached at (202) 564-1735. The overall PAG Manual project lead is Sara DeCair, from the Office of Radiation and Indoor Air's Radiation Protection Division. She may be reached at (202) 343-9108.

RECOMMENDATION
Because of the agency's unique responsibility to provide PAGs and the need for consistent emergency preparedness across the United States in light of the Fukushima disaster, I recommend that you approve this action for publication.

Attachments

MEMORANDUM

SUBJECT: **Draft Protective Action Guide (PAG) for Drinking Water for Radiological Incidents (Tier 3, SAN 5198) – ACTION MEMORANDUM**

FROM: Peter Grevatt
Director, Office of Ground Water and Drinking Water

TO: Joel Beauvais
Deputy Assistant Administrator

PURPOSE
Attached for publication in the *Federal Register* is the notice announcing the availability of the Draft Protective Action Guide for Drinking Water, which is a key addition to the U.S. Environmental Protection Agency's revision of the Protective Action Guides and Planning Guidance for Radiological Incidents (referred to as the PAG Manual). I am requesting that you sign the FR notice to announce our request public comments on the Draft PAG Action Guide for Drinking Water.

The purpose of the PAG Manual is to help federal, state, local and tribal authorities make decisions to protect the public during radiological emergencies.

DEADLINE
After responding to the Fukushima Radiation Release Incident, the agency recognized that it urgently needed to develop additional recommendations to protect the public from radiation in drinking water following a radiological emergency. The Office of Water, in collaboration with the Office of Air and Radiation, are working towards publishing the final PAG Manual, including the drinking water PAG, by the end of the calendar year 2016.

OVERVIEW
A protective action guide is the projected dose to an individual from a release of radioactive material at which a specific protective action to reduce or avoid that dose is recommended. Emergency management officials use PAGs for making decisions regarding actions to protect the public from exposure to radiation during an emergency. Such actions include, but are not limited to, evacuation, shelter-in-place, temporary relocation, access restrictions and food embargos. The PAGs are neither legally binding regulations nor standards and do not supersede any environmental laws or regulations. They are not intended to define "safe" or "unsafe" levels of exposure or contamination. They define the projected radiation doses at which specific actions may be warranted to reduce exposure during the weeks to months period following an incident. The PAG Manual provides information and flexibility to decision makers based on the characteristics of the incident and the local situation.

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STAKEHOLDER INVOLVEMENT

The primary users of the PAG Manual are state, local and tribal radiological preparedness organizations. A key audience for this proposed drinking water PAG is the drinking water industry. This draft guidance considers suggestions in comments received in 2013, and provides practical application strategies for emergency managers in state, local and tribal government organizations.

Document development and reviews have been conducted in close cooperation with the following departments and agencies on the PAGs Subcommittee of the Federal Radiological Preparedness Coordinating Committee: the Department of Energy, the Department of Defense, the Department of Homeland Security, including the Federal Emergency Management Agency, the Nuclear Regulatory Commission, the Department of Health and Human Services, including the Centers for Disease Control and Prevention and the Food and Drug Administration, the Department of Agriculture and the Department of Labor.

INTERAGENCY REVIEW

This action is not subject to Executive Order 12866, however the Office of Management and Budget was briefed and provided an interagency review. The agency considered comments received on the draft action guide and OMB cleared it for agency action on May 18, 2016.

IMPACTS

The drinking water PAG is not regulatory, however, it does influence regulations of FEMA and the Nuclear Regulatory Commission regarding emergency preparedness near nuclear power plants and for homeland security. Specific statements in the document remind the users that the guidance is flexible, and that incident-specific conditions may warrant using judgment when taking protective actions. This proposed drinking water PAG does not modify existing federal regulations or policies. The drinking water PAG relieves state, local and tribal emergency preparedness entities of the need to independently derive radiation levels at which to take protective actions. The drinking water PAG provides a common platform from which emergency managers may make consistent decisions to protect public health; it raises no environmental justice issues because it applies to all members of the public equally.

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This proposed addition of the drinking water PAG will make the revised PAG Manual more complete, covering impacts from all exposure pathways during a radiological emergency. Industry, state and professional organizations in the field of radiation protection requested this guidance in their comments on the 2013 PAG Manual revision; this draft guidance is responsive to their concerns.

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STAFF CONTACT
Samuel Hernandez, from the Office of Ground Water and Drinking Water, is the point of contact for questions regarding drinking water; he may be reached at (202) 564-1735. The overall PAG Manual project lead is Sara DeCair, from the Office of Radiation and Indoor Air's Radiation Protection Division. She may be reached at (202) 343-9108.

RECOMMENDATION
Because of the agency's unique responsibility to provide PAGs and the need for consistent emergency preparedness across the United States in light of the Fukushima disaster, I recommend that you approve this action for publication.

Attachments

To: Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]
Cc: Christ, Lisa[Christ.Lisa@epa.gov]; Huff, Lisa[Huff.Lisa@epa.gov]; Burneson, Eric[Burneson.Eric@epa.gov]
From: Flaharty, Stephanie
Sent: Tue 5/24/2016 11:02:47 AM
Subject: RE: RADS PAG Signature Package

Hi Sam,

As discussed yesterday, I need an email from OGC concurring on the guide and FR notice.

Thanks,

Steph

From: Hernandez-Quinones, Samuel
Sent: Monday, May 23, 2016 4:54 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>
Cc: Ellis, Jerry <Ellis.Jerry@epa.gov>; Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>; Wadlington, Christina <Wadlington.Christina@epa.gov>
Subject: Re: RADS PAG Signature Package

Hi Eric,

As discussed during our phone call earlier today, here attached are the documents that will go into the package as suggested by Stephanie. Once you review these we will incorporate your edits and then print the documents in letter head to be submitted in the concurrence chain.

I understand that Christina is working with OPA to have the rollout plan ready for this action.

In addition we need to include a typesetting from for the FRN and I plan to have it ready to incorporate into the package for tomorrow.

I am also formatting the PAG document to make it consistent with the editorial format of the Overall PAG, so we can upload it into the website that OAR has prepared to house the DW PAG. (This does not affect the package, but I think is important to note).

Let me know if you have any questions or comments.

Thanks

Sam

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Environmental Protection Agency
Office of Water
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Burneson, Eric
Sent: Monday, May 23, 2016 11:25 AM
To: Christ, Lisa; Huff, Lisa
Cc: Hernandez-Quinones, Samuel; Ellis, Jerry; Flaharty, Stephanie; Wadlington, Christina
Subject: RADS PAG Signature Package

All:

Thank you for all the work to get the PAGS documents through the OMB review process. Joel

has asked us to accelerate the process to get him the proposed Drinking Water PAG document to him for signature. I realize that we focused last week on the communication materials and OW now has those for coordination with OPA. I need your assistance in getting the signature package (memos, etc.) to me today so that I can transmit them to Peter when he returns tomorrow. Please let me know what I can do to help facilitate this.

Eric Burneson, P.E.

Director of Standards and Risk Management

Office of Ground Water and Drinking Water

US Environmental Protection Agency

Phone: 202-564-5250

Fax: 202 564 3760

To: Christ, Lisa[Christ.Lisa@epa.gov]
Cc: Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]; Ellis, Jerry[Ellis.Jerry@epa.gov]
From: Burneson, Eric
Sent: Mon 5/23/2016 9:54:33 PM
Subject: FW: RADS PAG Signature Package

Please note that the FR notice we are asking Joel to sign indicates that our cost document will be in the docket. Do we this document ready for inclusion into the EPA docket?

From: Burneson, Eric
Sent: Monday, May 23, 2016 5:51 PM
To: Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>
Cc: Ellis, Jerry <Ellis.Jerry@epa.gov>; Wadlington, Christina <Wadlington.Christina@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>
Subject: RE: RADS PAG Signature Package

I have reviewed the materials for the signature package for the PAG guidance. My comments and proposed edits are in the attached transmittal memo. I do not have comments on the other materials and concur with sending these documents forward for signature (with my edits to the memo incorporated).

Eric Burneson, P.E.

Director of Standards and Risk Management

Office of Ground Water and Drinking Water

US Environmental Protection Agency

Phone: 202-564-5250

Fax: 202 564 3760

From: Hernandez-Quinones, Samuel
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To: Burneson, Eric <Burneson.Eric@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>
Cc: Ellis, Jerry <Ellis.Jerry@epa.gov>; Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>; Wadlington, Christina <Wadlington.Christina@epa.gov>
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Let me know if you have any questions or comments.

Thanks

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Samuel Hernández Quiñones, P.E.
Environmental Engineer
Environmental Protection Agency
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1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

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Sent: Monday, May 23, 2016 11:25 AM
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Subject: RADS PAG Signature Package

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Eric Burneson, P.E.

Director of Standards and Risk Management

Office of Ground Water and Drinking Water

US Environmental Protection Agency

Phone: 202-564-5250

Fax: 202 564 3760

MEMORANDUM

SUBJECT: Protective Action Guide for Drinking Water for Radiological Incidents (Tier 3, SAN 5198)

FROM: Peter Grevatt
Director, Office of Ground Water and Drinking Water

TO: Joel Beauvais
Deputy Assistant Administrator

PURPOSE
Attached for publication in the Federal Register is the notice announcing the availability of the proposed Protective Action Guide for Drinking Water, which is a key addition to the U.S. Environmental Protection Agency's revision of the Protective Action Guides and Planning Guidance for Radiological Incidents (referred to as the PAG Manual). The agency is also asking the public for comments on the proposal.
I am requesting that you approve this action for publication. The purpose of the PAG Manual is to help federal, state, local and tribal authorities make decisions to protect the public during radiological emergencies.

DEADLINE
After responding to the Fukushima Radiation Release Incident, the EPA recognized that it urgently needed to develop additional recommendations to protect the public from radiation in drinking water following a radiological emergency. The Office of Water, in collaboration with the Office of Air and Radiation, are working towards publishing the final PAG Manual, including the drinking water PAG, by the end of the calendar year 2016.

BACKGROUND
A protective action guide is the projected dose to an individual from a release of radioactive material at which a specific protective action to reduce or avoid that dose is recommended. Emergency management officials use PAGs for making decisions regarding actions to protect the public from exposure to radiation during an emergency. Such actions include, but are not limited to, evacuation, shelter-in-place, temporary relocation, access restrictions and food embargos. The PAGs are neither legally binding regulations nor standards and do not supersede any environmental laws or regulations. They are not intended to define "safe" or "unsafe" levels of exposure or contamination. They define the projected radiation doses at which specific actions may be warranted to reduce exposure during the weeks to months period following an incident The PAG Manual provides information and flexibility to decision makers based on the characteristics of the incident and the local situation.

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- prevent acute effects;
- balance protection with other important factors and ensure that actions result in more benefit than harm; and
- reduce risk of chronic effects.

The drinking water PAG consists of a two-tiered, intermediate phase PAG of 100 mrem projected dose in the first year for children 15-years old and under, and nursing or pregnant women; and 500 mrem projected dose in the first year for the general population. The PAGis to inform decisions to; restrict the use of contaminated water for drinking purposes, and to provide alternative drinking water for the affected community. Options decision makers can consider for providing alternate drinking water could include: bottled water, obtaining a new uncontaminanted water source, installing treatment, interconnection between water systems or a combination of these actions.

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REGULATORY HISTORY

The Administrator of EPA assumed all the functions of the Federal Radiation Council in 1970, including the charge to "…advise the President with respect to radiation matters, directly or indirectly affecting health, including guidance for all federal agencies in the formulation of radiation standards and in the establishment and execution of programs of cooperation with [s]tates." The agency's role in PAG development was reaffirmed by the Federal Emergency Management Agency regulations and the Nuclear/Radiological Incident Annex of the National Response Framework in June 2008.

IMPACTS

The drinking water PAG is not regulatory, however, it does influence regulations of FEMA and the Nuclear Regulatory Commission regarding emergency preparedness near nuclear power plants and for homeland security. Specific statements in the document remind the users that the guidance is flexible, and that incident-specific conditions may warrant using judgment when taking protective actions. This proposed drinking water PAG does not modify existing federal regulations or policies. The drinking water PAG relieves state, local and tribal emergency preparedness entities of the need to independently derive radiation levels at which to take protective actions. The drinking water PAG provides a common platform from which emergency managers may make consistent decisions to protect public health; it raises no environmental justice issues because it applies to all members of the public equally.

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the NRC's decommissioning program, or other federal or state cleanup programs.

This proposed addition of the drinking water PAG will make the revised PAG Manual more complete, covering impacts from all exposure pathways during a radiological emergency. Industry, state and professional organizations in the field of radiation protection requested this guidance in their comments on the 2013 PAG Manual revision; this draft guidance is responsive to their concerns.

STAKEHOLDER INVOLVEMENT

The primary users of the PAG Manual are state, local and tribal radiological preparedness organizations. A key audience for this proposed drinking water PAG is the drinking water industry. This draft guidance considers suggestions in comments received in 2013, and provides practical application strategies for emergency managers in state, local and tribal government organizations.

Document development and reviews have been conducted in close cooperation with the following departments and agencies on the PAGs Subcommittee of the Federal Radiological Preparedness Coordinating Committee: the Department of Energy, the Department of Defense, the Department of Homeland Security, including the Federal Emergency Management Agency, the Nuclear Regulatory Commission, the Department of Health and Human Services, including the Centers for Disease Control and Prevention and the Food and Drug Administration, the Department of Agriculture and the Department of Labor.

INTERNAL REVIEW

This is a Tier 3 action. Through the development of this guidance, my staff have worked closely with staff from the Office of Air and Radiation. The Office of Water briefed and solicited comments from the Office of Solid Waste and Emergency Response (including the Environmental Response Team and the Consequence Management Advisory Team), the Office of General Counsel (the Air and Radiation Law Office and the Water Law Office) and the Office of Homeland Security. No major issues were identified and the reviewing offices concurred that the document should be published for public review and comment. In addition OMB reviewed this proposal and cleared it for agency action on May 18, 2016.

ANTICIPATED EXTERNAL REACTION

We are anticipating a reaction to this proposal similar to that received on the 2013 revised PAG Manual. In general, the intended users of the Manual (including state, local and tribal entities) were positive about the 2013 PAG Manual and will provide helpful suggestions. The drinking water utility associations will provide feedback on further implementation guidance needed for their plans. Some environmental groups will respond that that the radiation levels provided in the guidance are not safe (thousands of times greater than SDWA standards), and will state that the PAGs undermine environmental regulations including the drinking water standards for radionuclides We are working with OW communications to include messages in outreach materials to help address these concerns.

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RECOMMENDATION

Because of the agency's unique responsibility to provide PAGs and the need for consistent emergency

preparedness across the United States in light of the Fukushima disaster, I recommend that you this action for publication.

Attachments

Draft Protective Action Guide (PAG) for Drinking Water

1.0 INTRODUCTION

This proposal presents the protective action guide (PAG) and planning guidance to help protect the public in the event of a radiological incident that affects drinking water sources. A PAG is the projected dose to an individual from a release of radioactive material at which a specific protective action to reduce or avoid that dose is recommended.

The protective action for the drinking water exposure pathway is to restrict the use of contaminated water for drinking purposes and to provide alternative drinking water for the affected community. The drinking water PAGs apply during the intermediate phase of an incident, which may last for weeks to months[1]. This guidance only provides recommendations and does not confer any legal rights or impose any legally binding requirements upon any member of the public, states, or any other federal agency[2].

2.0 THE DRINKING WATER PAG

Currently there is no intermediate PAG for drinking water. Drinking water is an essential necessity for all people. The EPA determined, given the drinking water contamination that occurred in Japan following the Fukushima event, that a drinking water PAG is necessary. This proposal intends to provide the necessary tools to inform the level at which local emergency responders should restrict consumption of drinking water contaminated during a radiological emergency. In addition, based on public comment received in response to the revised interim PAG manual (2013), EPA believes that this proposal will make the overall PAG document a more robust and complete tool to be used by emergency responders.

EPA is proposing a two-tier drinking water PAG that would be used during the intermediate phase following a radiation incident: 500 millirem ((mrem) (5 millisievert (mSv)) projected dose[3] for the general population (defined as anyone over age 15,

[1] The intermediate phase is defined as the period beginning after the source and releases have been brought under control (has not necessarily stopped but is no longer growing) and reliable environmental measurements are available for use as a basis for decisions on protective actions and extending until these protective actions are no longer needed. The intermediate phase includes protective action recommendations for relocation of the public, worker exposure, reentry, food interdiction, and water interdiction. This phase may last from weeks to months and could also overlap the early phase (hours to days) and late phase (months to years).

[2] This guidance does not address or impact actions occurring under other statutory authorities such as the United States Environmental Protection Agency's (EPA) Superfund program, the Nuclear Regulatory Commission's (NRC) decommissioning program, or other federal or state programs. As indicated by the use of non-mandatory language such as "may," "should" and "can," this guidance only provides recommendations and does not confer any legal rights or impose any legally binding requirements upon any member of the public, states, or any other federal agency.

[3] All dose values expressed as Committed Effective Dose (CED) projected over one year. The CED, as defined in FGR-13 (1999) and ICRP 103 (2007), is the sum of the product of all organ doses times their tissue

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excluding pregnant women and nursing women), and 100 mrem (1 mSv) projected dose for pregnant women, nursing women and children age 15 and under[4].

EPA expects that the responsible party for any drinking water system adversely impacted during a radiation incident will take action to return to compliance with Safe Drinking Water Act (SDWA) maximum contaminant levels as soon as practicable. The proposed drinking water PAG provides a level of protection for the general population consistent with PAGs currently in place for other media in the intermediate phase (i.e., the Food and Drug Administration's 500 mrem PAG for ingestion of food[5,6]) and provides an additional level of protection for the most sensitive life stages. Intermediate phase doses can be projected using a one-year duration and compared to the PAG so that actions can be taken to avoid the exposure.

The already promulgated FDA food PAG and this proposed EPA drinking water PAG are designed to complement each other, and allow emergency response officials to account for and address doses from both eating contaminated food and drinking contaminated water. The food ingestion and drinking water pathways are inherently related because both address exposure through ingestion. In addition, water may be used in the preparation of some food products, and radionuclides in water may affect crops and ultimately enter the food supply. The FDA food PAG accounts for water intrinsic in food as purchased and EPA's proposed PAG accounts for drinking water, including water added to foods during preparation[7].

PAGs for both food and drinking water are needed because a radiological incident may affect the food supply and drinking water differently. In addition, because drinking water is usually locally controlled and food is frequently shipped in from distant locations, different and separate interdiction approaches would be appropriate. Finally, as explained in the revised interim PAG manual (2013)[8], the various PAGs are designed to work in concert, allowing emergency responders to choose the exposure reduction strategies that match the exposure scenario, community needs, and resources available in the particular emergency.

While FDA and EPA would work closely together in a radiological response, the two agency's authorities are separate so different strategies may be needed to protect drinking water and the food supply.

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weighting factors.

[4] Emergency management officials may consider whether it is appropriate to extend the lower tier to individuals beyond age 15 or to women who are trying to get pregnant or who believe they might be pregnant.

[5] Food and Drug Administration (FDA). 1998. *Accidental Radioactive Contamination of Human Food and Animal Feeds: Recommendations to State and Local Agencies*. Available online at: http://www.fda.gov/downloads/MedicalDevices/.../UCM094513.pdf.

[6] FDA. 2004. Supporting Document for Guidance Levels for Radionuclides in Domestic and Imported Foods. Docket No. 2003D-0558.

[7] Liquid beverages as well as milk are covered under the FDA food PAG.

[8] EPA. 2013. Draft PAG Manual for Interim Use and Public Comment. Available online at: http://www2.epa.gov/sites/production/files/2014-11/documents/pag-manual-interim-public-comment-4-2-2013.pdf.

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A PAG is intended as a point of reference to aid emergency response managers in their decision-making. After a particular situation stabilizes and becomes more clearly defined, local authorities may wish to modify the PAG level they consider to be appropriate in order to implement longer-term dose reduction strategies. EPA expects that the responsible party for any drinking water system adversely impacted during a radiation incident will take action to return to compliance with maximum contaminant levels (MCLs) as soon as practicable.

Should a major radiological event occur, emergency response officials should consider potential doses from all affected pathways (e.g., airborne plume, ground contamination, drinking water, foods) when making protective action decisions. Consideration of the specific conditions facing a community should be used in determining how each PAG should be implemented. Protective actions might include restrictions on consumption of garden produce, locally produced foods or embargo on sales of certain products, as well as drinking water actions described in Section 6.0 of this proposal. Local decision makers will need to determine the appropriate PAGs depending on projected risk. For the PAGs, exposure routes are divided up by time and circumstance to allow the many different potential protective actions to be tailored to the specific risks that must be addressed. The full PAG Manual addresses all of the other pathways (plume inhalation, immersion, ground shine, skin and thyroid doses in particular, long term exposure to contamination, reentry and return to complete cleanup work, etc.) but always within parameters appropriate to a corresponding PAG.

Section 7.0 explains how to calculate Derived Response Levels (DRLs) for radionuclides likely to appear in drinking water following a radiological contamination incident[9]. DRLs are concentrations of radionuclides in drinking water that correspond to EPA's proposed PAG of 100 mrem and 500 mrem. DRLs are essential because a PAG identifies a radiation dose rather than a quantity of radionuclides that can be measured directly in drinking water. DRLs are expressed in units of picocuries per liter (pCi/L) or becquerel per liter (Bq/L), and can be directly compared to measured radionuclide concentrations in finished drinking water. In the absence of site-specific DRLs developed by emergency responders acquainted with local conditions, EPA recommends using these DRLs, which are indicative of a worst case scenario in which there is no decay of isotopes over the exposure period, to guide actions to protect the public in the event of a radiological incident that affects drinking water sources.

3.0 FACTORS EPA CONSIDERED WHEN ESTABLISHING THE DRINKING WATER PAG

Section 1.3.2 of the revised interim PAG manual (2013)[10] provides the following three

[9] EPA selected I-131, Sr-90/Y-90, and Cs-137 as indicator isotopes likely to appear in water following a radiation contamination incident, these were selected based on previous documented experience.

[10] EPA. 2013. Draft PAG Manual for Interim Use and Public Comment. Available online at:

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principles for establishing PAGs.

1. Prevent acute effects
2. Balance protection with other important factors and ensure that actions result in more benefit than harm
3. Reduce risk of chronic effects

EPA crafted the drinking water PAG with these same principles in mind. Specifically, consideration was given to the acute effects of exposure to radiation and lifetime risk of cancer based on age and drinking water intake. EPA made use of the risk conversion factors set forth in Federal Guidance Report No. 13 (FGR-13)[11] and considerations of risk to the unborn set forth in National Council on Radiation Protection and Measurements (NCRP) Report No. 174.[12]

In preparing this proposal, EPA gave careful consideration to public feedback received on the revised interim PAG manual (2013) request for comments on adopting a drinking water PAG.[13]

This proposed drinking water PAG was developed based on reducing risks associated with ingesting drinking water contaminated with radionuclides. EPA also considered the potential radiation dose people could receive from various other uses of contaminated water, including showering, bathing, and dishwashing. In the United States, people typically shower, bathe, and wash dishes using the same source of water that they use to drink, but, for the radionuclides of interest, dermal and inhalation exposures from these activities generally represent much smaller risk than drinking contaminated water. Protection of a community's drinking water supply based on assumptions about ingestion will also protect the population from undue risk from contaminated drinking water by other routes of exposure.

4.0 RATIONALE FOR A TWO-TIER DRINKING WATER PAG

The two-tier PAG consists of 500 mrem for the general population (i.e., anyone over age 15, excluding pregnant women and nursing women), and a more stringent PAG of 100 mrem to inform protective actions for pregnant women, nursing women and children age 15 and under. Fetuses, infants and children are at greater risk from radiological exposures than adults due to the greater sensitivity of the developing body to the potential harmful effects of radiation and the longer dose commitment period for the

http://www2.epa.gov/sites/production/files/2014-11/documents/pag-manual-interim-public-comment-4-2-2013.pdf.

[11] EPA. 1999. Cancer Risk Coefficients for Environmental Exposure to Radionuclides. Federal Guidance Report #13. Available online at: http://www.epa.gov/rpdweb00/docs/federal/402-r-99-001.pdf.

[12] Brent, R.L., Frush, D.P., Harms, R.W., and M.S. Linet. 2013. *Preconception and Prenatal Radiation Exposure: Health Effects and Protective Guidance.* National Council on Radiation Protection. Report #174.

[13] Public feedback on the draft PAG Manual was requested in the Federal Register Notice Vol. 78, No. 72, p. 22257, April 15, 2013.

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longer-lived radionuclides that clear slowly from the body. A newborn that ingests radioactive material in water would be expected to be subject to the effects of that radiation for a longer period of time than if the same dose was experienced by an adult.

There are precedents for establishing a more protective threshold for radiological risks for younger members of the population due to the greater radiosensitivity of children versus adults. Following the Fukushima nuclear plant releases in 2011, the Japanese authorities set an emergency drinking water standard for infants that was one-third of the value for adults.[14]

PAGs and other guidance materials established by FDA for thyroid blocking with potassium iodide[15] and for ingestion of food[16] both include separate thresholds for more sensitive age groups.

For the sake of establishing clear and executable decisions in the intermediate phase of emergency response, EPA proposes a uniform PAG for fetuses, infants, and children, even though there may be considerable differences in the transmission of radiological drinking water contaminants to a fetus via the placenta, to an infant via formula, and to a child via direct consumption. Specifically, we have proposed a PAG level designed to protect the most sensitive of the three subgroups from exposure to radioactivity in drinking water following a radiological incident. Keeping PAGs relatively simple helps to minimize confusion during their implementation. Therefore, DRLs provided in Section 7.0 were selected by assessing risks to all age groups and choosing the most conservative concentration to the most sensitive age group.

The PAG of 500 mrem for the general population is designed to be used in concert with the FDA food PAG[17] since many of the considerations for a food PAG also apply to drinking water. It is also consistent with the guidance value of 500 mrem over one year established by the Department of Homeland Security as an intermediate-phase PAG for drinking water interdiction.[18] A PAG of 100 mrem provides the most sensitive members of the population a reasonable level of protection from exposure to radioactivity in drinking water following a radiological incident.

4.1 Other Standards

The current public radiation protection standard of 100 mrem per year effective dose is

[14] World Health Organization (WHO). 2011. FAQs: Japan nuclear concerns. Page 9, water contamination. September 2011. Available online at: http://www.who.int/hac/crises/jpn/faqs/en/index8.html.

[15] FDA. 2001. *Guidance: Potassium Iodide as a Thyroid Blocking Agent in Radiation Emergencies*. Available online at: http://www.fda.gov/downloads/Drugs/.../Guidances/ucm080542.pdf.

[16] FDA. 1998 *Accidental Radioactive Contamination of Human Foods and Animal Feeds: Recommendations for State and Local Agencies*. http://www.fda.gov/downloads/MedicalDevices/.../UCM094513.pdf

[17] FDA. 1998 *Accidental Radioactive Contamination of Human Foods and Animal Feeds: Recommendations for State and Local Agencies*. http://www.fda.gov/downloads/MedicalDevices/.../UCM094513.pdf

[18] See Planning Guidance for Protection and Recovery Following Radiological Dispersal Device (RDD) and Improvised Nuclear Device (IND), Table 1 in 73 FR 45029, August 2008, http://www.gpo.gov/fdsys/pkg/FR-2008-08-01/pdf/E8-17645.pdf.

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set forth in Nuclear Regulatory Commission (NRC) regulations (i.e., 10 CFR Part 20.1301). The International Commission on Radiation Protection[19] recommends reference levels in the range of 2,000 to 10,000 mrem (20 to 100 mSv) for protection of human health in emergencies, and in the range of 100 to 2,000 mrem (1 to 20 mSv) for occupational exposure, exposure by caregivers, or residential radon exposure. Based on a risk reduction approach EPA is proposing its drinking water PAGs at the lower (more stringent) end of the latter range as an added layer of precaution.

Following the Fukushima nuclear plant releases in 2011, there was concern about levels of radioactive iodine-131 (I-131) in drinking water. The Japanese authorities applied a two-tier set of provisional emergency standards to I-131 in water: 300 Bq/L (about 8,100 pCi/L) for adults and 100 Bq/L (about 2,700 pCi/L) for infants (specifically for drinking water used to prepare baby formula). According to informational materials assembled by the World Health Organization in the wake of the incident,[20] these emergency drinking water standards were provisional regulation values established by the Japanese Food Sanitation Act, as indicated by the Nuclear Safety Commission of Japan. These standards were precautionary and took international guidance into consideration, including recommendations of the International Atomic Energy Agency and the International Commission on Radiological Protection. The infant standard, furthermore, was equivalent to the international guideline set by Codex Alimentarius[21] for infant food.

Under the Safe Drinking Water Act (SDWA), EPA established maximum contaminant levels (MCLs) for radiological contaminants in drinking water. The National Primary Drinking Water Regulations (NPDWR) for radionuclides, set forth in 40 CFR Part 141, effectively adopt a dose-based limit of 4 mrem/yr for beta particle and photon radioactivity. These requirements are based on lifetime exposure criteria, which assume 70 years of continued exposure to contaminants in drinking water. The Agency determined that it may not be appropriate to base protective actions during short-term emergency incidents on lifetime exposure criteria. While the SDWA framework is appropriate for day-to-day normal operations, it does not provide the necessary tools to assist emergency responders with determining the need for potentially ongoing protective actions during the intermediate phase of a response. However, regardless of the cause of an incident, EPA expects that the responsible party for any drinking water system impacted during a radiation incident will take action to return to compliance with the NPDWR levels by the earliest feasible time.

5.0 INTERPRETING AND APPLYING THE PAG

The drinking water PAG is intended primarily to guide planning and decision-making efforts by local and state officials, including drinking water providers, during the intermediate phase of a radiological emergency when surface water sources are

[19] International Commission on Radiological Protection (ICRP). 2007. *The 2007 Recommendations of the International Commission on Radiological Protection*, Annals of the ICRP, Volume 37, Nos.2-4, 2007, Publication 103, ISSN 0146-6453, ISBN 978-0-7020-3048-2, pp. 96-98

[20] WHO. 2011.

[21] http://www.codexalimentarius.org/about-codex/en/.

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particularly vulnerable to contamination from deposition of radioactive material from the atmosphere. Actions to protect water sources may be implemented at other levels and at any time following a radiological incident, and even before an anticipated release occurs. The goal is to keep the dose to the public as low as reasonably achievable. Radiation doses should be reduced to below SDWA MCLs as soon as practicable.

5.1 Interpreting the two-tier PAG

EPA is proposing a two-tier PAG: 500 mrem for the general population (anyone over age 15, excluding pregnant women and nursing women) and 100 mrem for pregnant women, nursing women and children.

Authorities have flexibility on how to apply the PAG. In some cases they may find it prudent to use the PAG of 100 mrem as a target for the whole population, while in other circumstances, authorities may find that it makes sense to use both targets simultaneously. For example, emergency managers can use a two-tiered approach to focus on protecting the most sensitive population with limited alternate water resources. If bottled water must be rationed, for example, authorities may make the bottled water available to children, pregnant women and nursing women, and instruct the rest of the population to use a public drinking water supply that will not trigger the 500 mrem PAG.

As stated above, the PAGs are intended as guidance, and local authorities should take into account local circumstances (e.g., incident scope and community needs) when implementing a course of action to protect the public.

5.2 Operationalizing PAGs as Derived Response Levels (DRLs)

The PAG specifies a radiation dose to avoid via drinking water exposure projected over one year. In order to determine whether a PAG should be implemented, authorities will need to establish a relationship between the measured concentration of one or more radionuclides in finished drinking water and the radiation dose members of the population might experience as a result of drinking contaminated water. Incident-specific factors that may be taken into consideration include:

1. The radionuclides being emitted in this particular emergency situation
2. The rate and timing of entry of the radionuclides into a drinking water supply, via atmospheric deposition or by other means
3. The rate of natural attenuation of the radionuclides
4. The estimated potential duration of public exposure to contaminated drinking water
5. The estimated daily consumption of contaminated drinking water

Those responsible for implementing PAGs will need to convert PAGs into Derived Response Levels (DRLs) in units of Bq/L or pCi/L. Section 7.0 of this document provides DRLs and explains how they can be calculated. Selected dose conversion factors and standard estimates of daily drinking water consumption for various age groups are also provided, along with references to informational resources.

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While the PAG Manual is primarily for advance planning, there are specific radionuclides, including cesium-137 (Cs-137), iodine-131 (I-131) and strontium/yttrium-90 (Sr-90/Y-90) that are of particular interest for radiological incident scenarios where drinking water sources might be contaminated. Section 7.0 presents default DRLs for these radionuclides to aid emergency managers in making water restriction decisions involving these contaminants. DRLs for these radionuclides are presented as examples for purpose of illustration. If other radionuclides are present, DRLs should be calculated using the same methodology, as discussed in Section 7.0.

5.3 Practical Considerations

After deposition has ended, radionuclide concentrations present in a water supply may decline at rates determined by half-lives of the individual nuclides, or may decline faster by dilution with uncontaminated water, or may even increase after rainfall and seasonal thaw events. The concentration of radionuclides in drinking water as a function of time after the incident can be measured, estimated or modeled based on knowledge of the incident, including radionuclide sources and the properties of the drinking water supply. Such estimates should be validated by monitoring or sampling, as discussed in Section 6.1.

Unlike naturally-occurring radionuclide contamination of drinking water from minerals present in geological formations, for a radiation release incident, ground water sources are expected to be less vulnerable to contamination than surface water sources, but this should be confirmed by monitoring or sampling. The potential for ground water to become contaminated will greatly depend on whether the ground water resource is close to the surface or is from a deep aquifer bounded by an aquitard, as well as on rainfall rate and the composition of the overlying soil (which will affect the rate at which contaminants deposited on soil will migrate to the ground water resource).

Section 6.3 discusses actions that authorities can take to minimize radiation doses from drinking water. Because radionuclides decay over time, early interventions such as restricting use of contaminated water immediately after the incident may be most effective in reducing radiation dose to the population. Such decisions may need to be made based on limited information. Authorities may find it prudent to take such action even before field sample measurements or modeled estimates of radiation dose have been calculated and validated.

6.0 PLANNING AND TAKING ACTION

This section discusses actions that state and/or local authorities and drinking water utilities can take to protect the public in the event that a water supply is affected by a radiological contamination incident. Different actions described here may be appropriate for initial and intermediate phases depending on local resources. This section does not constitute a complete handbook for radiological emergency response, but it describes considerations that can be included in comprehensive emergency planning at the state,

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local and utility level. Actions that public authorities and drinking water providers should take include water monitoring (described in Section 6.1), public notification (described in Section 6.2), and mitigation measures to protect the water supply and the water-consuming public (described in Section 6.3).

Preventive action, such as temporary closure of water system intake valves to prevent a contaminant plume from entering the system, may be taken in advance of an anticipated release; it is not necessary to wait until drinking water contamination is detected. Emergency response plans need to consider whether sufficient storage capacity is available to support the community's fire suppression and sanitation needs while the intake valves are closed.

Emergency planning provides the opportunity to develop state, local and utility-specific plans and implementation procedures that reflect the unique needs of a particular community. Advance planning can provide clarity and facilitate the decision-making process during a radiological emergency.

6.1 Monitoring and Characterization of Contaminants

A comprehensive radiological surveillance program to monitor concentrations of radionuclides of interest in both source water and finished drinking water would provide an indication of whether any adjustments are necessary or if the actions being taken are effective.

The NPDWR for radionuclides requires community water systems (CWSs) to conduct monitoring at each entry point to the distribution system to ensure that every customer's water does not exceed the MCLs for radionuclides.[22] All CWSs are required to monitor for gross alpha, radium-226/228, and uranium. In addition, CWSs designated by the state as "vulnerable"[23] and those using waters "contaminated"[24] by effluents from nuclear facilities must also conduct monitoring for beta particle and photon radioactivity. If a water system is directed by the primacy agency to collect samples for compliance purposes, approved analytical methods must be used.

In the event of a radiological contamination incident, state officials may require public water systems to immediately collect additional samples for radionuclides, including beta particle and photon activity. However, EPA recognizes that during an emergency situation it may be necessary to identify alternative sampling and analytical approaches to obtain data to inform short-term actions by emergency response personnel. Many states have established Radiological Emergency Preparedness[25] programs designed to guide sample collection and analysis and to advise emergency managers in a radiological emergency. Additionally, the Federal Radiological Monitoring and

[22] For more information about monitoring requirements for the Radionuclides Rule see the "Radionuclides Rule: A Quick Reference Guide" (EPA 816-F-01-003, June 2001) or "Implementation Guidance for Radionuclides" (EPA 816-F-00-002, March 2002).

[23] For more information see 40 CFR 141.26(b)(1).

[24] For more information see 40 CFR 141.26(b)(2).

[25] http://www.fema.gov/radiological-emergency-preparedness-program

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Assessment Center (FRMAC)[26] can deploy monitoring and sampling field teams and provide dose assessment expertise to assist states and local communities in responding to an emergency. See the National Response Framework, Nuclear/Radiological Incident Annex[27] for information on roles and capabilities.

Once the situation is better characterized and systems are working towards returning to compliance, monitoring should be conducted at entry points to the distribution systems using approved analytical methods. EPA provides rapid laboratory analysis methods for selected radionuclides to expedite the analytical turnaround time while simultaneously meeting measurement quality objectives.[28] Samples should be collected from entry points to the distribution system. Challenges may arise from variability in environmental matrices. Advance emergency planning can help to achieve sample representativeness and homogeneity relative to routine samples.

If members of the public are served by drinking water from household cisterns or private wells, local officials should consider how monitoring should be undertaken to determine levels of target radionuclides and assess the risks posed to these populations.

6.2 Public Notification

An emergency response plan should include a strategy for keeping the community informed of the actions being taken by authorities and clearly delineate roles and responsibilities of local officials and emergency responders. This includes communicating to customers of CWSs and (if applicable) to those who rely on household cisterns and private wells. It is critical for water utilities to participate in the emergency response planning activities.

If compliance monitoring indicates that contamination levels exceed the MCL for any radionuclide, water systems are required to issue public notice on a “Tier 2” time frame (i.e., as soon as practical, but no later than 30 days after the system learns of the violation). CWSs should be able to issue repeat notices as required. However, states may determine that the notification requirement should be elevated to a “Tier 1” Public Notification (i.e., as soon as practical, but no later than 24 hours) based on a significant potential for serious adverse effects on human health due to short-term exposure.[29]

During a response to a radiological incident, water systems may have difficulty with issuing public notifications in addition to managing the response to the contamination event. The state may issue public notification on behalf of the water system (40 CFR

[26] The Federal Radiological Monitoring and Assessment Center (FRMAC) is a federal asset available on request by the Department of Homeland Security (DHS) and state and local agencies to respond to a nuclear or radiological incident.

[27] Document is available online at: http://www.fema.gov/media-library/assets/documents/25554

[28] EPA. 2014a. Rapid Radiochemical Methods Applicable to Selected Radionuclides for Environmental Remediation Following Radiological Incidents. Third Edition. Front matter available online at: http://www.epa.gov/narel/Docs/Preface%20to%203rd%20Edition%20%28Online%29%2004-16-14.pdf. Rapid methods are available online at: http://www.epa.gov/narel/rapid_methods.html

[29] For more information see 40 CFR 141.202(a), Table 1(9), Special public notices: Occurrence of a waterborne disease outbreak or other waterborne emergency.

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141.210(a)). This would allow the state to deliver a consistent message to all affected customers and allow the system to concentrate its efforts on returning to operation or returning to compliance in the event of a radionuclides MCL violation. For more information see the Revised Public Notification Handbook (EPA 816-R-09-013, March 2010).

State and local authorities should be proactive in communicating about risks and uncertainties and providing clear instructions to the public. For any incident response requiring coordinated federal support, refer to the National Response Framework and Emergency Support Function 15, External Affairs Annex, for roles and response protocols.

6.3 Additional Actions to Reduce Levels of Contamination

In the initial phase following a radiological incident, officials should take reasonable precautionary measures (i.e., closing intake valves) to protect water sources as soon as notification of a radiological release or impending release is received. Moving into the intermediate phase, as data are obtained from monitoring programs (including sampling and analysis of water upstream and downstream of a water system intake structure and within the distribution system), officials should benchmark observed concentrations against the default DRLs discussed in Section 7.0 or situation specific DRLs that account for specific isotopes present, release patterns, and decay. Officials would then be in a position to make informed decisions about the need to implement protective actions. Water system officials should be in close communication with their primacy agency (e.g., state/county regulators) prior to taking protective actions.

Options available to water systems to reduce radiation dose to drinking water customers include applying treatment technologies, relying on back-up storage, blending water, accessing alternative water sources, and rationing of uncontaminated water or a combination of these actions. Examples of these options are described briefly below. Technical and economic burden on smaller systems may be reduced by pooling resources with other water systems (e.g., establishing interconnections, sharing technical and operator staff, and sharing of supplies and equipment). As part of emergency planning efforts, local officials should consider the possibility of temporary rationing of uncontaminated or treated water if supplies are inadequate to meet normal demand.

All of these options require advanced planning and should be evaluated and included in States plans as appropriate. Guidance on developing emergency drinking water supplies is available from EPA.[30] The Centers for Disease Control and Prevention also provide resources and guidance for establishing emergency water supplies and communicating water advisories to the public.[31]

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[30] EPA. 2011b. *Planning for an Emergency Drinking Water Supply,* EPA 600/R-11/054, June 2011.

[31] CDC. 2014. Drinking Water Advisory, Planning, & Emergency Response Resources. Available on the Internet at: http://www.cdc.gov/healthywater/emergency/drinkingwateradvisory.html. Last updated December 2, 2014.

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6.3.1 Treating Contaminated Water

Systems can treat contaminated water to reduce elevated radionuclide levels. Four treatment technologies are classified by EPA as Best Available Technologies (BATs) for removing radionuclides from drinking water: coagulation/filtration, ion exchange, lime softening and reverse osmosis. EPA has also listed these BATs as Small System Compliance Technologies (SSCTs) for radionuclides treatment, along with less commonly used techniques such as green sand filtration, co-precipitation with barium sulfate, electrodialysis/electrodialysis reversal, pre-formed hydrous manganese oxide filtration and activated alumina. Further information on radionuclide treatment options is available from EPA.[32]

Removal efficiency for specific radionuclides will vary across available technologies and may depend on technology-specific parameters (e.g., ion exchange effectiveness depends on pH, resin selected and presence of other ions). In addition, liquid and solid treatment residuals with elevated radiation levels may have special disposal requirements. Disposal options may vary from one jurisdiction to another, and may depend on the type, concentration and volume of residuals. Further information on residual disposal considerations is available from EPA.[33]

6.3.2 Temporarily Closing Intake Valves

If the deposition of radionuclides into a river is limited in duration, only a portion of the water may become contaminated. A water system with enough storage capacity can temporarily close its intake valves and allow the contaminants to flow past the intake to prevent contamination from entering the distribution system.

If stored water supplies are not sufficient to meet community fire suppression and sanitation needs while intake valves are closed, the system could take other actions discussed in this section, including supplementing water supplies with alternate sources or implementing water use restrictions.

6.3.3 Establishing Interconnections to Neighboring Systems

If the water system is part of a larger, regional supply system, existing interconnections to an uncontaminated neighboring water supply could be activated. It might also be possible to construct temporary pipelines on an impromptu basis.

If this option is implemented, steps should be taken to prevent backflow from the contaminated system. Care will also need to be taken to ensure that the supply of water and treatment capacity at the uncontaminated system will adequately serve the larger

[32] EPA. 2015a. Radionuclides in Drinking Water -- Compliance Options: Treatment Technology Descriptions. Available on the Internet at: http://cfpub.epa.gov/safewater/radionuclides/radionuclides.cfm. See also EPA. 2002a. *Radionuclides in Drinking Water: A Small Entity Compliance Guide.* EPA 815-R-02-001, 2002. (http://www.epa.gov/safewater/radionuclides/pdfs/guide_radionuclides_smallsystems_compliance.pdf).

[33] EPA. 2006a. *A System's Guide to the Management of Radioactive Residuals from Drinking Water Treatment Technologies.* EPA 816-F-06-012, August 2006. See also EPA. 2006b. *A System's Guide to the Identification and Disposal of Hazardous and Non-Hazardous Water Treatment Plant Residuals.* EPA 816-F-06-011, August 2006.

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population.

6.3.4 Blending Water Sources

If a source of uncontaminated water is available, a water system may choose to blend water from contaminated and uncontaminated sources of drinking water to minimize radiation doses from drinking water. The water may be blended using storage tanks or a common header to allow for complete mixing prior to distribution to customers.

6.3.5 Importing Water in Tanker Trucks

Under some circumstances (e.g., difficult terrain, urgent need), it may be more efficient or expedient to temporarily transport clean water by truck, rail or barge to distribution centers in the affected community than to lay down pipelines. State and local departments of public health, as well as emergency management agencies, typically have standards and requirements related to hauling water. Water systems would benefit from having procedures for importing water in tanker trucks documented in an emergency response plan. All water systems importing water by tanker should verify that their plan adheres to state and local requirements. If the water system's distribution system is not being used to provide the imported water, the needs of residents with limited transportation options and physical disabilities should be taken into account when selecting locations for distribution centers. The availability of suitable transport vehicles may limit use of this option.

6.3.6 Importing Bottled Water

Providing bottled water to the affected community is another possible option during an emergency situation. The water may come from a nearby water system or from a water bottling company. This option may be cost-effective during an emergency if water is needed quickly and if the length of the emergency does not require long-term action, such as the construction of an interconnecting pipe.

7.0 DERIVED RESPONSE LEVELS (DRLS)

EPA developed the radionuclide-specific default DRLs by calculating the radionuclide concentrations in drinking water that would result in projected radiation doses of 100 and 500 mrem, assuming one year of continuous exposure and average drinking water intake rates for children and adults.

Several considerations should be kept in mind when using these pre-calculated DRLs. The DRLs presented in Table 1 are calculated on the assumption that each radionuclide is the only radionuclide present in drinking water. DRLs are additive. In situations where multiple radionuclides are present, DRLs should be combined using a sum of fractions approach to ensure that the projected dose does not exceed the PAG of 100 or 500 mrem. (An example calculation is provided in Section 7.1.) Table 1 does not present DRLs for all radionuclides that may occur in drinking water following a contamination incident.

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These default DRLs were calculated using a simplifying and conservative assumption that radionuclide levels will remain constant over the course of one year. This assumption would cover the most serious situations in which continuous release and replenishment of isotopes is ongoing. As such, the assumption provides an added level of protection in light of the many unknowns involved in an emergency. In fact, after the initial deposition event has occurred, concentrations may decline at rates determined by the half-lives of individual isotopes, or decline faster due to dilution with uncontaminated water, or could even increase after rainfall or subsequent deposition events. Some nuclides, like I-131, have half-lives measured in days, while others, like Cs-137, have half-lives measured in years.

The default DRLs in the PAGs are provided for convenience to allow local entities to make decisions about drinking water provided by public water systems quickly in the event of a radiological emergency. As one moves further into the intermediate phase, when the incident characteristics have been assessed, assumptions regarding duration of the radiological release and the half-life of nuclides involved as well as other factors may be considered by local decision makers in projecting risks and adapting mitigation measures. All radionuclides are covered by the assessment tools provided by FRMAC. For instance, if an alpha emitting isotope was of concern following a radiation contamination incident, it would be included in any calculations regarding protective actions for drinking water. As such, local officials may choose to work with FRMAC to calculate situation-specific DRLs that are based on information gained during the intermediate phase, including identification of specific isotopes, release patterns, and associated decay functions.

Early exceedance of the default DRL does not preclude the possibility that doses will stay below PAGs as radionuclide concentrations in water decline by a combination of radioactive decay and natural attenuation. If the concentrations of radionuclides do not exceed DRLs over the course of one year, doses will remain below the PAG.

Table 1. Default derived response levels (DRLs)[34] -- drinking water concentrations corresponding to specified doses (mrem) of select radionuclides, assuming one year of exposure at constant levels[35]

	DRLs for pregnant women, nursing women and children age 15 and younger – 100 mrem dose	DRLs for adults (excluding pregnant women and nursing women) – 500 mrem dose

[34] Values provided in this table have been rounded.

[35] The calculated values provided in this table are intended to illustrate the methodology and conservative assumptions EPA believes are adequate to provide a reasonable level of protection to sensitive populations. Dose conversion factors, calculation methodologies as well as other comprehensive information regarding DRL development will be available and updated as needed in the FRMAC Assessment Manual.

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Sr-90/Y-90[36]	1,000 pCi/L	7,400 pCi/L
Cs-137	6,140 pCi/L	16,570 pCi/L
I-131	1,310 pCi/L	10,350 pCi/L

The DRLs provided in Table 1 were derived by calculating life stage-specific DRLs (as described in section 7.2) for six different ages (Infant, 1, 5, 10, 15, and adults). For the most sensitive life-stages concentrations of individual radionuclides yielding a 100 mrem dose were calculated for each age group, then the most protective/lowest radioactivity concentration was selected as the DRL for the entire sensitive life-stage group, including pregnant and nursing women. The calculated values differ across individual life-stages because each age group has a different dose conversion factor and drinking water ingestion rate.

For example, the sensitive life-stage group DRL for I-131 was derived by calculating the concentration of I-131 which yields a 100 mrem dose for each age group. In this case the resulting concentrations were: infants (2,110 pCi/L), 1 yr (1,860 pCi/L), 5 yr (1,310 pCi/L), 10 yr (1,950 pCi/L), and 15 yr (2,410 pCi/L). Since the lowest calculated concentration corresponds to the 5 year old (1,310 pCi/L), this value is the DRL that will be applied to be the most protective for the entire sensitive life-stage group.

7.1 Calculation of Default DRLs

DRLs may be calculated with the help of the following equations.

The dose (mrem or Sv) due to the ingestion of radionuclide *i* to age group *a* over time period *T* is calculated as follows:

$$D_{iaT} = I_{iaT} \times DCF_{ia}$$

Where:

D_{iaT} = Dose (in mrem or Sv) due to the ingestion of radionuclide *i* to age group *a* over time period *T*

I_{iaT} = The total intake of radionuclide *i* for age group *a* (in pCi or Bq) over time period *T*

DCF_{ia} = The dose conversion factor (also referred to as dose coefficient) for the ingestion of radionuclide *i* in drinking water and age group *a* (in mrem/pCi or Sv/pCi, or mrem/Bq or Sv/Bq). See section 7.4 for guidance on DCFs.

The quantity of radionuclide *i* ingested by age group *a* over a given time period, *T*, is calculated as follows.

[36] Y-90 is a radioactive decay product of Sr-90 and will normally be found alongside Sr-90 in the case of a Sr-90 release; therefore they are treated together. Solubility differences may cause less yttrium to be present, however it is a conservative assumption to include both in DRLs. When calculating the combined DRL, note that the dose coefficients (see Table 3) are additive.

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$$I_{iaT} = C_i \times Ing_a \times T$$

Where:

I_{iaT} = The total intake of radionuclide *i* for age group *a* (in pCi or Bq) over time period *T.*

C_i = The concentration of radionuclide *i* in drinking water (in pCi/L or Bq/L). A simplifying assumption is made that the concentration of the radionuclide is constant over the time period *T*.

Ing_a = The daily ingestion rate of water for age group *a*, in L/day. See Section 7.3 for guidance on daily water ingestion rates.

T = The time period that the population is drinking contaminated water (days). In this analysis, the time period of interest is 365 days.

For each age group *a* and radionuclide *i*, substituting the applicable PAG for the dose D_{iaT} and then solving for C_i yields the applicable DRL.

For example, the DRL for iodine-131 for an adult is calculated as follows:

$$DRL = PAG / (Ing_a * T * DCF_{ia})$$

$$DRL = 500 \text{ mrem} / (1.643 \text{ L/day} * 365 \text{ days} * 8.05 \text{ E-05 mrem/pCi})$$

$$= 500/4.83 \text{ E-02}$$

$$= 10{,}352 \text{ pCi/L}$$

Which is best rounded to 10,350 pCi/L considering the uncertainties.

7.2 Combining default DRLs for Multiple Radionuclides

If multiple radionuclides are present in the water supply, then it is recommended that the obtained concentrations of each radionuclide be divided by the provided DRL values. This provides a fraction of the allowed concentration (and the projected dose) for each radionuclide. If the sum of the fractions is less than 1, the total dose is assumed to be below the PAG values. Emergency response personnel may need to calculate the sum of fractions on an ongoing basis, as the concentrations of individual radionuclides may change over time. The sum of the fractions is expressed as follows:

$$F = \sum (C_i / DRL_i)$$

Where:

F = sum of the fractions

C_i = the concentration of radionuclide *i* in the water supply (pCi/L or Bq/L)

$DRL_{i\ (100 \text{ or } 500 \text{ mrem});}$ = derived response level for the ith radionuclide (pCi/L or Bq/L)

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For example, if Sr-90/Y-90 and Cs-137 are the only radionuclides present in the drinking water, and Sr-90/Y-90 are present at 1,540 pCi/L and Cs-137 is present at 10,600 pCi/L, the combined dose exceeds the PAG of 100 mrem for fetuses, infants, and children:

$$F = \sum (C_i / DRL_i)$$

$$= (1{,}540 \text{ pCi/L} / 1{,}000 \text{ pCi/L}) + (10{,}600 \text{ pCi/L} / 6{,}140 \text{ pCi/L})$$

$$= 1.54 + 1.73$$

$$= 3.27$$

$3.27 > 1$, so the PAG is exceeded.

The same concentrations do not exceed the PAG of 500 mrem for adults:

$$F = \sum (C_i / DRL_i)$$

$$= (1{,}540 \text{ pCi/L} / 7{,}415 \text{ pCi/L}) + (10{,}600 \text{ pCi/L} / 16{,}570 \text{ pCi/L})$$

$$= 0.21 + 0.64$$

$$= 0.85$$

$0.85 < 1$, so the PAG is not exceeded.

7.3 Water Ingestion Rates

Table 2 presents mean values for tap water consumption taken from the CD supplement to FGR-13.[37] Other sources of estimated drinking water ingestion rates are available (e.g., EPA's *Exposure Factors Handbook*[38]), but the ingestion rates presented in FGR-13 were specifically designed with corresponding age ranges to be used in conjunction with other data from FGR-13. Values are provided for males and females in various age groups. Since the ingestion rates for males are higher (and therefore more conservative) than those for females, EPA elected to use the intake values for males to represent each age group in the calculation of DRLs in Table 1. In addition, for the calculation of the adult DRL, EPA made the conservative assumption that the ingestion rate would be assigned the highest value within the adult category, the 50 year old male, at an estimated 1.643 L/day.

Table 2. Mean Drinking Water Ingestion Rates from FGR-13

Age (years)	Tap Water (L/day)	
	Male	Female
0	0.191	0.188
1	0.223	0.216

[37] EPA. 2002b. Federal Guidance Report 13. Cancer Risk Coefficients for Environmental Exposure to Radionuclides: CD Supplement, EPA-402-C-99-001, Rev. 1.

[38] EPA. 2011a.

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5	0.542	0.499
10	0.725	0.649
15	0.900	0.712
20	1.137	0.754
50	1.643	1.119
75	1.564	1.179

Source: CD Supplement to FGR-13, Table 3.1.

7.4 Dose Coefficients, or Dose Conversion Factors (DCF) (Sv/Bq Ingested)

The effective whole body dose per Bq ingested of various radionuclides in water, for various age groups, can be found on the CD supplement to FGR-13.[39] These DCF values apply to both males and females. Table 3 presents DCFs for a few representative radionuclides of interest, converted to U.S. units for convenience.

Table 3. Dose Conversion Factors[40]

Age	DCFs (mrem per pCi ingested), from FGR-13			
	Sr-90	**Y-90**	**Cs-137**	**I-131**
Infant (100 day old)	8.40E-04	1.16E-04	7.79E-05	6.82E-04
1 year old	2.68E-04	7.41E-05	4.58E-05	6.62E-04
5 year old	1.73E-04	3.69E-05	3.58E-05	3.83E-04
10 year old	2.21E-04	2.18E-05	3.75E-05	1.94E-04
15 year old	2.92E-04	1.24E-05	4.95E-05	1.27E-04
Adult	1.02E-04	9.94E-06	5.02E-05	8.05E-05

Source: CD Supplement to FGR-13.

[39] EPA. 2002

[40] The DCFs in this table show the variation across age groups and nuclides and are provided to illustrate the conservative methodology and assumptions EPA believes are adequate to provide a reasonable level of protection to sensitive populations. Additional information including updated dose conversion factors, calculation methodologies as well as other comprehensive information regarding DRL development will be appended to the FRMAC Assessment Manual.

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ENVIRONMENTAL PROTECTION AGENCY

[EPA-HQ-OAR-2008-0268; FRL-####-##]

Notice of Availability: Protective Action Guide (PAG) for Drinking Water after a Radiological Incident

AGENCY: Environmental Protection Agency (EPA).

ACTION: Notice of document availability for public comment.

SUMMARY: As part of its mission to protect human health and the environment, the Environmental Protection Agency (EPA) publishes protective action guides to help federal, state, local and tribal emergency response officials make radiation protection decisions during emergencies. The EPA, in coordination with a multi-agency working group within the Federal Radiological Preparedness Coordinating Committee (FRPCC), is proposing an addition to the 2013 revised interim PAG Manual – Protective Action Guides and Planning Guidance for Radiological Incidents ("2013 revised PAG Manual" hereafter) to provide guidance on drinking water.

DATES: Comments must be received on or before 45 days after date of publication in the Federal Register.

ADDRESSES: Submit your comments, identified by Docket ID No. **EPA-HQ-OAR-2008-0268**, by one of the following methods—

- www.regulations.gov: Follow the on-line instructions for submitting comments.
- Email: to a-and-r-docket@epa.gov; Docket ID No. **EPA-HQ-OAR-2008-0268.**
- Fax: (202) 566-1741
- Mail: Air and Radiation Docket and Information Center, Environmental Protection

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Agency, Mail Code: 6102T, 1200 Pennsylvania Ave., NW, Washington, DC 20460

Instructions: Direct your comments to Attn: Docket ID No. **EPA-HQ-OAR-2008-0268.** The Agency's policy is that all comments received will be included in the public docket without change and may be made available online at www.regulations.gov, including any personal information provided, unless the comment includes information claimed to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Do not submit information that you consider to be CBI or otherwise protected through www.regulations.gov or e-mail. The www.regulations.gov website is an "anonymous access" system, which means the EPA will not know your identity or contact information unless you provide it in the body of your comment. If you send an e-mail comment directly to the EPA without going through www.regulations.gov, your e-mail address will be automatically captured and included as part of the comment that is placed in the public docket and made available on the Internet. If you submit an electronic comment, the EPA recommends that you include your name and other contact information in the body of your comment and with any disk or CD-ROM you submit. If the EPA cannot read your comment due to technical difficulties and cannot contact you for clarification, the EPA may not be able to consider your comment. Electronic files should avoid the use of special characters, any form of encryption and be free of any defects or viruses. For additional information about the EPA's public docket, visit the EPA Docket Center homepage at http://www.epa.gov/epahome/dockets.htm.

Docket: All documents in the docket are listed in the www.regulations.gov index. Although listed in the index, some information is not publicly available, e.g., CBI or other information whose disclosure is restricted by statute. Certain other material, such as copyrighted material, will be publicly available only in hard copy. The EPA has established a docket for this action

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under Docket ID No. **EPA-HQ-OAR-2008-0268**. Publicly available docket materials are available either electronically through www.regulations.gov or in hard copy at the Air and Radiation Docket in the EPA Docket Center, (EPA/DC) WJC West, Room 3334, 1301 Constitution Ave., NW, Washington, DC 20004. The EPA Docket Center Public Reading Room is open from 8:30 a.m. to 4:30 p.m., Monday through Friday, excluding legal holidays. The telephone number for the Public Reading Room is (202) 566-1744 and the telephone number for the Air and Radiation Docket is (202) 566-1742. In accordance with the EPA's regulations at 40 CFR Part 2 and in accordance with normal EPA docket procedures, if copies of any docket materials are requested, a reasonable fee may be charged for photocopying.

FOR FURTHER INFORMATION CONTACT: Lisa M. Christ, Standards and Risk Management Division, Office of Ground Water and Drinking Water , Mail Code 4607M, U.S. Environmental Protection Agency, 1200 Pennsylvania Avenue NW, Washington, DC 20460; telephone number: (202) 564-8354; fax number: (202) 564-3758; E-mail: *christ.lisa@epa.gov*.

SUPPLEMENTARY INFORMATION:

1. General Information

A. Does this Action Apply to me?

This action does not impose any requirements on anyone. It notifies interested parties of the EPA's proposed drinking water protective action guide (PAG) and request for public comment. The drinking water PAG will help federal, state, local, tribal officials and public water systems make decisions about use of water during radiological emergencies. The drinking water PAG is non-regulatory guidance.

B. What authority does EPA have to provide Protective Action Guidance?

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The historical and legal basis of the EPA's role in the 2013 PAG Manual begins with Reorganization Plan No. 3 of 1970, in which the Administrator of the EPA assumed all the functions of the Federal Radiation Council (FRC), including the charge to "…advise the President with respect to radiation matters, directly or indirectly affecting health, including guidance for all federal agencies in the formulation of radiation standards and in the establishment and execution of programs of cooperation with states." (Reorg. Plan No. 3 of 1970, sec. 2(a) (7), 6(a) (2); § 274.h of the Atomic Energy Act of 1954, as amended (AEA), codified at 42 U.S.C. § 2021(h)). Recognizing this role, FEMA directed EPA in its Radiological Emergency Planning and Preparedness Regulations to "establish Protective Action Guides (PAGs) for all aspects of radiological emergency planning in coordination with appropriate federal agencies." (44 CFR 351.22(a)). FEMA also tasked the EPA with preparing "guidance for state and local governments on implementing PAGs, including recommendations on protective actions which can be taken to mitigate the potential radiation dose to the population."(44 CFR 351.22(b)). All of this information was to "be presented in the Environmental Protection Agency (EPA) 'Manual of Protective Action Guides and Protective Actions for Nuclear Incidents.'"(44 CFR 351.22(b)).

Additionally, section 2021(h) charged the Administrator with performing "such other functions as the President may assign to him [or her] by Executive order." Executive Order 12656 states that the Administrator shall "[d]evelop, for national security emergencies, guidance on acceptable emergency levels of nuclear radiation…." (Executive Order No. 12656, sec. 1601(2)). EPA's role in PAGs development was reaffirmed by the *National Response Framework, Nuclear/Radiological Incident Annex* of June 2008.

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C. What is the PAG Manual: Protective Action Guides and Planning Guidance for Radiological Incidents?

In 2013, EPA revised the PAG Manual that provides federal, state and local emergency management officials with guidance for responding to radiological emergencies (78 FR 22257, April 15, 2013). See the 2013 PAG Manual at www2.epa.gov/radiation/protective-action-guides-pags. A protective action guide (PAG) is the projected dose to an individual from a release of radioactive material at which a specific protective action to reduce or avoid that dose is recommended. Emergency management officials use PAGs for making decisions regarding actions to protect the public from exposure to radiation during an emergency. Such actions include evacuation, shelter-in-place, temporary relocation, water and food restrictions.

The PAGs are based on the following essential principles, which also apply to the selection of any protective action during an incident:

- Prevent acute effects.
- Balance protection with other important factors and ensure that actions result in more benefit than harm.
- Reduce risk of chronic effects.

The PAG Manual is not a legally binding regulation or standard and does not supersede any environmental laws; PAGs are not intended to define "safe" or "unsafe" levels of exposure or contamination. As indicated by the use of non-mandatory language such as "may," "should" and "can," the Manual only provides recommendations and does not confer any legal rights or impose any legally binding requirements upon any member of the public, states or any federal agency. Rather, the PAG Manual provides projected radiation dose levels at which specific actions are recommended in order to reduce or avoid that dose. The 2013 revised interim PAG

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Manual is designed to provide flexibility to be more or less restrictive as deemed appropriate by decision makers based on the unique characteristics of the incident and the local situation.

D. What additional guidance is being proposed for the PAG Manual?

The drinking water protective action guidance was developed by a multi-agency Subcommittee of the Federal Radiological Preparedness Coordinating Committee and is published by the EPA with concurrence from the Department of Energy, the Department of Defense; the Department of Homeland Security, including the Federal Emergency Management Agency; the Nuclear Regulatory Commission; the Department of Health and Human Services, including both the Centers for Disease Control and Prevention as well as the Food and Drug Administration; the U.S. Department of Agriculture; and the Department of Labor.

A large scale radiation contamination incident could impact the US, driving the need for a pre-established drinking water PAG. The EPA is proposing a two-tiered intermediate phase drinking water PAG of 100 mrem projected dose in the first year for infants, children and pregnant or nursing women and 500 mrem projected dose in the first year for the general population. The proposed PAG is designed to work in concert with the other Protective Action Guides currently in place for other media in the intermediate phase (i.e., the Food and Drug Administration's 500 mrem PAG for ingestion of food) and provides an additional level of protection for the most sensitive life stages. Authorities have flexibility on how to apply the PAG. In some cases they may find it prudent to use a single PAG (e.g., 100 mrem) as a target for the whole population, while in other circumstances, authorities may find that it makes sense to use both targets simultaneously. For example, emergency managers can use a two-tiered approach to focus on protecting the most sensitive population with limited alternate water resources. Because the water and food PAGs are designed to be used in concert, the appropriate

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protective actions will be influenced by the exposure scenario and factors that influence the viability of alternative approaches to reducing dose.

This proposed additional guidance recommends protective actions when drinking water may be impacted by a radiological or nuclear incident. The two-tier approach seeks to balance the goal of keeping radiation doses as low as possible with the practical and logistical challenges of providing alternative drinking water during the response to a disaster. The EPA has included examples of estimated costs for selected drinking water protective actions in the docket. In developing the drinking water PAG, the Agency considered potential cumulative exposure from a radiation incident. Ultimately, a PAG does not represent an "acceptable" routine exposure; a PAG is a dose at which protective action is advised in order to reduce or avoid that dose. Every PAG is developed with the same three principles: prevent acute effects, balance protection with other important factors and ensure that actions result in more benefit than harm and reduce risk of chronic effects. Emergency management officials should consider all exposure routes when making protective action decisions in an emergency.

Under the Safe Drinking Water Act (SDWA), the Agency has established maximum contaminant levels (MCLs) for radiological contaminants in drinking water. The National Primary Drinking Water Regulations (NPDWR) for radionuclides are based on lifetime exposure criteria and assume 70 years of continued exposure to contaminants in drinking water. While the SDWA framework is appropriate for day-to-day normal operations, it may not provide the necessary tools to assist emergency responders with determining the need for an immediate protective action. EPA assumes that any drinking water system adversely impacted during a radiation incident will be able to achieve compliance with MCLs as soon as practicable.

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E. How were comments received on the 2013 draft PAG Manual considered in developing this proposal?

On April 15, 2013, EPA published a Federal Register Notice requesting public comments on the appropriateness of developing and incorporating a drinking water PAG in the revised PAG Manual.

Regarding the specific issue of drinking water, the Agency received about 50 comment letters from members of the public, state and local emergency response and health organizations, environmental advocates, industry associations, organizations opposed to nuclear power, and from national and international radiation protection organizations.

Several commenters from state emergency management agencies and radiation control programs expressed an urgent need for EPA to establish a drinking water PAG pointing out that drinking water is the only media not currently addressed in the PAG manual. Commenters stated that a drinking water PAG is a critical aspect of a coordinated emergency response after a radiation contamination incident.

Commenters representing states agencies from Ohio, Kansas, Pennsylvania, Illinois and Washington suggested that a drinking water PAG should be established at the 500 mrem level, to be consistent with the FDA food PAG and with the DHS guidance[1] for water. While EPA agrees with the need of establishing a drinking water PAG which is consistent with currently available guidance, it is also important to note that EPA believes that when possible PAG recommendations should provide an additional level of protection to sensitive life-stages. For short-term incidents it is appropriate to consider a lower tier PAG level of 100 mrem for sensitive life-stages including pregnant women, nursing women and children 15 years old and

[1] Guidance established by the Department of Homeland Security as an intermediate-level PAG for drinking water interdiction (73 FR 45029).

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under. This approach of setting a two tier level of protection incorporates suggestions submitted by commenters regarding the adequate consideration of children and sensitive subpopulations. There is an abundant precaution built into the derivation of the drinking water PAG through a variety of assumptions, including amount of water consumed, exposure duration, dose-response modeling, and proposing a two-tiered approach, and using the dose-response for the most sensitive to derive the PAG for children through age 15 years. Today's proposal ensures that protective measures are appropriate for all members of the public, including sensitive subpopulations.

In contrast, several commenters from environmental protection advocate organizations suggested that a drinking water PAG is not needed, and urged EPA to defer any emergency response measures regarding drinking water solely on the NPDWR for Radionuclides MCLs. Some commenters expressed concerns that establishing a drinking water PAG would weaken existing environmental standards and regulations. However, the drinking water standards are legal limits designed to prevent health effects from everyday exposure to low levels of radiation over long periods and they are not changing with this proposal.

Estimated risk of excess cancer cases for lifetime exposure (70 years) to radioactive contaminants in drinking water at 4 mrem/yr (the MCL) generally falls in a range of risks deemed acceptable by the Agency's regulations. Estimated risks associated with a shorter (one year) exposure to radioactivity in drinking water at the proposed PAG levels fall within a similar range. Emergency guides are temporary measures to minimize risk while enabling prioritization of limited resources during an emergency response.

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The PAG levels are guidance for emergency situations; they do not supplant any standards or regulations, nor do they affect the stringency or enforcement of any standards or regulations. The PAG levels are intended to be used only in an emergency when radiation levels have already exceeded environmental standards. EPA expects that any drinking water system adversely impacted during a radiation incident will take action to return to compliance with Safe Drinking Water Act (SDWA) levels as soon as practicable.

F. When will the PAG Manual be finalized?

Once comments on this addition have been addressed, EPA will add drinking water guidance to the full PAG Manual which will be issued in final form for incorporation into state, local, tribal and federal emergency response plans over a one-year implementation timeframe.

G. What Should I Consider as I Prepare My Comments for EPA?

1. *Submitting Confidential Business Information (CBI):*

Do not submit this information to the EPA through www.regulations.gov or e-mail. Clearly mark all of the information that you claim to be CBI. For CBI information in a disk or CD ROM that you mail to the EPA, mark the outside of the disk or CD ROM as CBI and then identify electronically within the disk or CD ROM the specific information that is claimed as CBI. In addition to one complete version of the comment that includes information claimed as CBI, a copy of the comment that does not contain the information claimed as CBI must be submitted for inclusion in the public docket. Information marked as CBI will not be disclosed except in accordance with procedures set forth in 40 CFR Part 2.

2. *Tips for Preparing Your Comments:*

When submitting comments, remember to:

- Identify the rulemaking by docket number, subject heading, ***Federal Register*** date and page

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number.

- Follow directions—the EPA may ask you to respond to specific questions or organize comments by referencing the chapter number.
- Explain why you agree or disagree; suggest alternatives and substitute language for your requested changes.
- Describe any assumptions and provide technical information and data that you used.
- If you estimate potential costs or burdens, explain how you arrived at your estimate in sufficient detail to allow it to be reproduced.
- Illustrate your concerns with specific examples and suggest alternatives.
- Explain your views as clearly as possible, avoiding the use of profanity or personal threats.
- Make sure to submit your comments by the comment period deadline identified.

H. What Specific Comments are Being Sought?

While all comments regarding any aspect of the drinking water PAG guidance will be considered, please comment on the following issues specifically—

- Please comment on the appropriateness of the drinking water PAG, the guidance for advance planning and potential implementation challenges associated with the two-tier approach.
- Please comment on what implementation challenges might be associated with the two-tiered approach to the water PAG that EPA should consider and suggest additional guidance that would be helpful.
- Please comment on whether (and if so why) EPA should reconsider using a single-tier drinking water PAG rather than tiered approach proposed today.

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- Please suggest additional guidance that would aid pre-incident planning and implementation specific to your community's drinking water systems.
- Please comment on how this guidance should be implemented in emergency response and recovery plans at all levels of government, including considerations for public communications during an emergency.

In the future, calculations and derived response levels will be provided in the Federal Radiological Monitoring and Assessment Center (FRMAC) Assessment Manuals. Emergency planners are referred to FRMAC Monitoring and Sampling Methods to assess surface and drinking water impacts from a radiological emergency. See the Assessment and Monitoring & Sampling folders at http://www.nv.doe.gov/nationalsecurity/homelandsecurity/frmac/manuals.aspx. After considering public comments, EPA intends to issue a final PAG Manual which will supersede the 1992 PAG Manual and the 2013 revised PAG Manual.

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Dated: __ __, 2016

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Joel Beauvais,

Deputy Assistant Administrator, Office of Water

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United States Environmental Protection Agency
Office of Ground Water and Drinking Water

Routing and Transmittal Slip

TO:	ACTION	INITIALS	DATE
1. S. Hernandez, Team Lead OW/OGWDW/SRMD/TAB	Prep Package		
2. L. Christ, Branch Chief OW/OGWDW/SRMD/TAB	Review/Concur		
3. E. Burneson, Director OW/OGWDW/SRMD	Review/Concur		
4. S. Flaharty, Sr. Regulatory Manager OW/OGWDW	Review/Clear		
5. P. Grevatt, Director OW/OGWDW	Sign/Approve		
6. S. Flaharty, Sr. Regulatory Manager OW/OGWDW	Review/Clear		
7. S. Evalenko, Sr. Regulatory Manager OW/IO	Review/Clear		
8. K. Kopocis, Assistant Administrator Office of Water	Sign/Approve		

Package Contents:

Protective Action Guide (PAG) for Drinking Water after a Radiological Incident

1. **Proposed Guidance**
2. **Federal Register Notice**
3. **Transmittal Memorandum**

Remarks:

The Staff from the Office of Ground Water and Drinking Water working in close coordination with Staff from the Office of Air developed the contents enclosed in this package. OMB reviewed this proposal and cleared it for agency action on May 18, 2016.

The purpose of this effort is to formally publish the PAG proposal Notice in the Federal Register.

For additional information about the PAGs project and/or for pickup and delivery of this package please contact Samuel Hernandez at (202-564-1735 or hernandez.samuel@epa.gov)

United States Environmental Protection Agency
Office of Ground Water and Drinking Water

Routing and Transmittal Slip

TO: (*Name, Title*)	ACTION	INITIALS	DATE
1. S. Hernandez, Team Lead OW/OGWDW/SRMD/TAB	Prep Package		
2. L. Christ, Branch Chief OW/OGWDW/SRMD/TAB	Review/Concur		
3. E. Burneson, Director OW/OGWDW/SRMD	Review/Concur		
4. S. Flaharty, Sr. Regulatory Manager OW/OGWDW	Review/Clear		
5. P. Grevatt, Director OW/OGWDW	Sign/Approve		
6. S. Flaharty, Sr. Regulatory Manager OW/OGWDW	Review/Clear		
7. S. Evalenko, Sr. Regulatory Manager OW/IO	Review/Clear		
8. K. Kopocis, Assistant Administrator Office of Water	Sign/Approve		

Package Contents:

Protective Action Guide (PAG) for Drinking Water after a Radiological Incident

1. **Proposed Guidance**
2. **Federal Register Notice**
3. **Transmittal Memorandum**

Remarks:

The Staff from the Office of Ground Water and Drinking Water working in close coordination with Staff from the Office of Air developed the contents enclosed in this package. OMB reviewed this proposal and cleared it for agency action on May 18, 2016.

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contact Samuel Hernandez at (202-564-1735 or hernandez.samuel@epa.gov)

MEMORANDUM

SUBJECT: Protective Action Guide for Drinking Water for Radiological Incidents (Tier 3, SAN 5198)

FROM: Peter Grevatt
Director, Office of Ground Water and Drinking Water

TO: Joel Beauvais
Deputy Assistant Administrator

PURPOSE
Attached for publication in the Federal Register is the notice announcing the availability of the proposed Protective Action Guide for Drinking Water, which is a key addition to the U.S. Environmental Protection Agency's revision of the Protective Action Guides and Planning Guidance for Radiological Incidents (referred to as the PAG Manual). The agency is also asking the public for comments on the proposal.
I am requesting that you approve this action for publication. The purpose of the PAG Manual is to help federal, state, local and tribal authorities make decisions to protect the public during radiological emergencies.

DEADLINE
After responding to the Fukushima Radiation Release Incident, the EPA recognized that it urgently needed to develop additional recommendations to protect the public from radiation in drinking water following a radiological emergency. The Office of Water, in collaboration with the Office of Air and Radiation, are working towards publishing the final PAG Manual, including the drinking water PAG, by the end of the calendar year 2016.

BACKGROUND
A protective action guide is the projected dose to an individual from a release of radioactive material at which a specific protective action to reduce or avoid that dose is recommended. Emergency management officials use PAGs for making decisions regarding actions to protect the public from exposure to radiation during an emergency. Such actions include, but are not limited to, evacuation, shelter-in-place, temporary relocation, access restrictions and food embargos. The PAGs are neither legally binding regulations nor standards and do not supersede any environmental laws or regulations. They are not intended to define "safe" or "unsafe" levels of exposure or contamination. They define the projected radiation doses at which specific actions may be warranted in order to reduce or avoid that dose. The PAG Manual provides flexibility to be more or less restrictive as deemed appropriate by decision makers based on the characteristics of the incident and the local situation.

The PAGs are based on the following essential principles, which also apply to the selection of any protective action during an incident:

- prevent acute effects;
- balance protection with other important factors and ensure that actions result in more benefit than harm; and
- reduce risk of chronic effects.

The drinking water PAG consists of a two-tiered, intermediate phase PAG of 100 mrem projected dose in the first year for children 15-years old and under, and nursing or pregnant women; and 500 mrem projected dose in the first year for the general population. The protective action is to restrict the use of contaminated water for drinking purposes and to provide alternative drinking water for the affected community. Options for providing alternate drinking water could include: bottled water, altering the raw water source of a water system, interconnection between systems or a combination of these actions.

Under the Safe Drinking Water Act, the agency has established maximum contaminant levels for radiological contaminants in drinking water. The National Primary Drinking Water Regulations for Radionuclides established a dose-based limit of 4 mrem/year for beta particle and photon radioactivity, based on lifetime exposure criteria, which assume 70 years of continued exposure to contaminants in drinking water. The agency determined that it may not be appropriate to base response measures during short-term emergency incidents on lifetime exposure criteria. While the SDWA framework is appropriate for day-to-day normal operations, it may not provide the necessary tools to assist emergency responders with determining the need for an immediate protective action. EPA assumes that any drinking water system adversely impacted during a radiation incident will be able to achieve compliance with MCLs as soon as practicable.

REGULATORY HISTORY

The Administrator of EPA assumed all the functions of the Federal Radiation Council in 1970, including the charge to "…advise the President with respect to radiation matters, directly or indirectly affecting health, including guidance for all federal agencies in the formulation of radiation standards and in the establishment and execution of programs of cooperation with [s]tates." The agency's role in PAG development was reaffirmed by the Federal Emergency Management Agency regulations and the Nuclear/Radiological Incident Annex of the National Response Framework in June 2008.

IMPACTS

The drinking water PAG is not regulatory, however, it does influence regulations of FEMA and the Nuclear Regulatory Commission regarding emergency preparedness near nuclear power plants and for homeland security. Specific statements in the document remind the users that the guidance is flexible, and that incident-specific conditions may warrant using judgment when taking protective actions. This proposed drinking water PAG does not modify existing federal regulations or policies. The drinking water PAG relieves state, local and tribal emergency preparedness entities of the need to independently derive radiation levels at which to take protective actions. The drinking water PAG provides a common platform from which emergency managers may make consistent decisions to protect public health; it raises no environmental justice issues because it applies to all members of the public equally.

The PAG Manual is for temporary measures during radiological emergencies and is not intended to impact site cleanups occurring under other statutory authorities such as the EPA's Superfund program, the NRC's decommissioning program, or other federal or state cleanup programs.

This proposed addition of the drinking water PAG will make the revised PAG Manual more complete, covering impacts from all exposure pathways during a radiological emergency. Industry, state and professional organizations in the field of radiation protection requested this guidance in their comments on the 2013 PAG Manual revision; this draft guidance is responsive to their concerns.

STAKEHOLDER INVOLVEMENT

The primary users of the PAG Manual are state, local and tribal radiological preparedness organizations. A key audience for this proposed drinking water PAG is the drinking water industry. This draft guidance considers suggestions in comments received in 2013, and provides practical application strategies for emergency managers in state, local and tribal government organizations.

Document development and reviews have been conducted in close cooperation with the following departments and agencies on the PAGs Subcommittee of the Federal Radiological Preparedness Coordinating Committee: the Department of Energy, the Department of Defense, the Department of Homeland Security, including the Federal Emergency Management Agency, the Nuclear Regulatory Commission, the Department of Health and Human Services, including the Centers for Disease Control and Prevention and the Food and Drug Administration, the Department of Agriculture and the Department of Labor.

INTERNAL REVIEW

This is a Tier 3 action. Through the development of this guidance, my staff have worked closely with staff from the Office of Air and Radiation. The Office of Water briefed and solicited comments from the Office of Solid Waste and Emergency Response (including the Environmental Response Team and the Consequence Management Advisory Team), the Office of General Counsel (the Air and Radiation Law Office and the Water Law Office) and the Office of Homeland Security. No major issues were identified and the reviewing offices concurred that the document should be published for public review and comment. In addition OMB reviewed this proposal and cleared it for agency action on May 18, 2016.

ANTICIPATED EXTERNAL REACTION

We are anticipating a reaction to this proposal similar to that received on the 2013 revised PAG Manual. In general, the intended users of the Manual (including state, local and tribal entities) were positive about the 2013 PAG Manual and will provide helpful suggestions for incorporation during this round of review. The drinking water industry will provide feedback on further implementation guidance needed for their plans. There is a sentiment among some environmental groups that the radiation levels provided in the guidance are not safe, or will in some way undermine environmental regulations. Strategic messages have been included in our outreach materials to help address these concerns.

STAFF CONTACT

Samuel Hernandez, from the Office of Ground Water and Drinking Water, is the point of contact for questions regarding drinking water; he may be reached at (202) 564-1735. The overall PAG Manual project lead is Sara DeCair, from the Office of Radiation and Indoor Air's Radiation Protection Division. She may be reached at (202) 343-9108.

RECOMMENDATION

Because of the agency's unique responsibility to provide PAGs and the need for consistent emergency preparedness across the United States in light of the Fukushima disaster, I recommend that you this action for publication.

Attachments

To: Wadlington, Christina[Wadlington.Christina@epa.gov]; Christ, Lisa[Christ.Lisa@epa.gov]
From: Hernandez-Quinones, Samuel
Sent: Mon 5/23/2016 6:02:35 PM
Subject: Re: PAGS

Yes, there is a FRN associated with this action. We will include it in the package to be sent to Joel.

Let me know if you want to look at it.

Sam

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Environmental Protection Agency
Office of Water
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Wadlington, Christina
Sent: Monday, May 23, 2016 2:00 PM
To: Christ, Lisa; Hernandez-Quinones, Samuel
Subject: PAGS

Are we not doing an FRN anymore for PAGS? There are edits to the Comm Roll out that suggest this? Just clarifying.

Christina Wadlington

Communications Director

Office of Ground Water and Drinking Water

U.S. Environmental Protection Agency

Tel: 202.566.1859

Email: wadlington.christina@epa.gov

To: Christ, Lisa[Christ.Lisa@epa.gov]; Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]
From: Wadlington, Christina
Sent: Mon 5/23/2016 6:00:55 PM
Subject: PAGS

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Christina Wadlington

Communications Director

Office of Ground Water and Drinking Water

U.S. Environmental Protection Agency

Tel: 202.566.1859

Email: wadlington.christina@epa.gov

To: Christ, Lisa[Christ.Lisa@epa.gov]; Huff, Lisa[Huff.Lisa@epa.gov]
Cc: Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]; Ellis, Jerry[Ellis.Jerry@epa.gov]; Flaharty, Stephanie[Flaharty.Stephanie@epa.gov]; Wadlington, Christina[Wadlington.Christina@epa.gov]
From: Burneson, Eric
Sent: Mon 5/23/2016 3:25:08 PM
Subject: RADS PAG Signature Package

All:

Thank you for all the work to get the PAGS documents through the OMB review process. Joel has asked us to accelerate the process to get him the proposed Drinking Water PAG document to him for signature. I realize that we focused last week on the communication materials and OW now has those for coordination with OPA. I need your assistance in getting the signature package (memos, etc.) to me today so that I can transmit them to Peter when he returns tomorrow. Please let me know what I can do to help facilitate this.

Eric Burneson, P.E.

Director of Standards and Risk Management

Office of Ground Water and Drinking Water

US Environmental Protection Agency

Phone: 202-564-5250

Fax: 202 564 3760

To: Flaharty, Stephanie[Flaharty.Stephanie@epa.gov]
Cc: Grevatt, Peter[Grevatt.Peter@epa.gov]; Christ, Lisa[Christ.Lisa@epa.gov]; Huff, Lisa[Huff.Lisa@epa.gov]; Oshida, Phil[Oshida.Phil@epa.gov]; Greene, Ashley[Greene.Ashley@epa.gov]; Harris, Adrienne[Harris.Adrienne@epa.gov]; Wadlington, Christina[Wadlington.Christina@epa.gov]; Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]
From: Burneson, Eric
Sent: Fri 5/20/2016 12:38:52 PM
Subject: RE: Joel's Interest in the PAGs Post-OMB Review

The communications / rollout package has been the focus on this since we know there will be significant public interest in this action. Thanks to Christina's help that package is up with OW communications. Since the messaging in this document will carry over into the memos The team is now turning to assembling the rest of package for review and signature.

I don't have any concern with sharing the PAG document and FRN that cleared OMB with Joel at this stage but we need to see if Peter wants to give this a once over.

From: Flaharty, Stephanie
Sent: Friday, May 20, 2016 6:14 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Grevatt, Peter <Grevatt.Peter@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>; Oshida, Phil <Oshida.Phil@epa.gov>; Greene, Ashley <Greene.Ashley@epa.gov>; Harris, Adrienne <Harris.Adrienne@epa.gov>
Subject: Joel's Interest in the PAGs Post-OMB Review
Importance: High

Morning Eric,

Please see Karen's Gude's inquiry for Joel in this email chain and let me know if you have any information (since Lisa is out today). Also, can we provide a post-OMB draft ?

Thanks,

Steph

From: Flaharty, Stephanie
Sent: Friday, May 20, 2016 6:08 AM

To: Gude, Karen <Gude.Karen@epa.gov>
Cc: Lousberg, Macara <Lousberg.Macara@epa.gov>; Evalenko, Sandy <Evalenko.Sandy@epa.gov>; Arrigoni, Holly <Arrigoni.Holly@epa.gov>; Campbell, Ann <Campbell.Ann@epa.gov>
Subject: RE: PAGs

Morning Karen,

We heard that OP said OMB wouldn't accept the entire PAG guidance into the ROCIS system for review; we heard it was because of the drinking water conversation (piece) pending. Now that water is concluding, OP says that they anticipate OMB will accept the full final Manual soon.

That's all I know at the moment. I will contact staff and see if we know more on timing, etc., and see if I can get a copy of the post-OMB review draft.

Steph

From: Gude, Karen
Sent: Thursday, May 19, 2016 2:55 PM
To: Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>
Cc: Lousberg, Macara <Lousberg.Macara@epa.gov>; Evalenko, Sandy <Evalenko.Sandy@epa.gov>; Arrigoni, Holly <Arrigoni.Holly@epa.gov>; Campbell, Ann <Campbell.Ann@epa.gov>
Subject: PAGs

Hi Steph,

I wanted to check in on PAGs to see if you might have some info on status/timing. My understanding is that OGWDW completed OMB review of the PAGs document. Do we have a sense on the timing for having the document finalized and the FRN signature package ready for Joel? Is OGWDW planning to wait until the FRN publishes to release the document or is

planning for a pre-publication FRN? At the weekly planning meeting today, it sounded like Joel was interested in moving this forward expeditiously, given that there might be outside interest.

Also, Joel had asked for a copy of the final PAGs document. I sent a separate note to Ashley and Adrienne asking for a copy.

Karen Gude, Special Assistant

U.S. Environmental Protection Agency

Office of Water

Phone: (202) 564-0831

To: Flaharty, Stephanie[Flaharty.Stephanie@epa.gov]
Cc: Burneson, Eric[Burneson.Eric@epa.gov]; Grevatt, Peter[Grevatt.Peter@epa.gov]; Christ, Lisa[Christ.Lisa@epa.gov]; Huff, Lisa[Huff.Lisa@epa.gov]; Oshida, Phil[Oshida.Phil@epa.gov]; Harris, Adrienne[Harris.Adrienne@epa.gov]
From: Greene, Ashley
Sent: Fri 5/20/2016 12:24:18 PM
Subject: Re: Joel's Interest in the PAGs Post-OMB Review

Karen did ask me and Adrienne yesterday to provide the final version. I checked in with Lisa and have already provided to Karen the OMB approved version.

Thanks,
Ashley

Sent from my iPhone

On May 20, 2016, at 6:13 AM, Flaharty, Stephanie <Flaharty.Stephanie@epa.gov> wrote:

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U.S. Environmental Protection Agency

Office of Water

Phone: (202) 564-0831

To: Burneson, Eric[Burneson.Eric@epa.gov]
Cc: Grevatt, Peter[Grevatt.Peter@epa.gov]; Christ, Lisa[Christ.Lisa@epa.gov]; Huff, Lisa[Huff.Lisa@epa.gov]; Oshida, Phil[Oshida.Phil@epa.gov]; Greene, Ashley[Greene.Ashley@epa.gov]; Harris, Adrienne[Harris.Adrienne@epa.gov]
From: Flaharty, Stephanie
Sent: Fri 5/20/2016 10:13:39 AM
Subject: Joel's Interest in the PAGs Post-OMB Review

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Cc: Lousberg, Macara <Lousberg.Macara@epa.gov>; Evalenko, Sandy <Evalenko.Sandy@epa.gov>; Arrigoni, Holly <Arrigoni.Holly@epa.gov>; Campbell, Ann <Campbell.Ann@epa.gov>
Subject: RE: PAGs

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Karen Gude, Special Assistant

U.S. Environmental Protection Agency

Office of Water

Phone: (202) 564-0831

To: Dorjets, Vlad[Ex. 6 - Personal Privacy @omb.eop.gov]
Cc: Christ, Lisa[Christ.Lisa@epa.gov]; Greene, Ashley[Greene.Ashley@epa.gov]; Burneson, Eric[Burneson.Eric@epa.gov]; Hill, Glynis[Hill.Glynis@epa.gov]; Owens, Nicole[Owens.Nicole@epa.gov]; Wadlington, Christina[Wadlington.Christina@epa.gov]
From: Grevatt, Peter
Sent: Wed 5/18/2016 8:37:23 PM
Subject: Re: OMB Review Concluded of Drinking Water PAG

Got it and great news. Thanks Vlad!

Sent from my iPhone

On May 18, 2016, at 4:33 PM, Dorjets, Vlad <Ex. 6 - Personal Privacy @omb.eop.gov> wrote:

Peter,

OMB has just concluded its review of the proposed Drinking Water PAGs. Big thanks to you and your staff for addressing the comments submitted by OMB and interagency reviewers.

Vlad

To: Grevatt, Peter[Grevatt.Peter@epa.gov]
Cc: Christ, Lisa[Christ.Lisa@epa.gov]; Greene, Ashley[Greene.Ashley@epa.gov]; Burneson, Eric[Burneson.Eric@epa.gov]; Hill, Glynis[Hill.Glynis@epa.gov]; Owens, Nicole[Owens.Nicole@epa.gov]
From: Dorjets, Vlad
Sent: Wed 5/18/2016 8:32:35 PM
Subject: OMB Review Concluded of Drinking Water PAG

Peter,

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Vlad

To: Burneson, Eric[Burneson.Eric@epa.gov]; Christ, Lisa[Christ.Lisa@epa.gov]; Grevatt, Peter[Grevatt.Peter@epa.gov]
From: Harris, Adrienne
Sent: Wed 5/18/2016 3:03:39 PM
Subject: RE: Administrator Weekly Email: PAGs (DRAFT)

Thanks! I will send the final version below up to the IO.

-

Drinking Water Protective Action Guidelines

OW anticipates OMB's clearance on our proposed Drinking Water Protective Action Guideline (PAG) within the next few days. We will be seeking public comment on the proposed drinking water PAG via FRN. A cost analysis will be shared as a separate document for public review in addition to the PAG on the EPA's website. The purpose of a PAG is to guide the first year of planning and decision-making efforts by local and state officials following a radiological emergency. The proposed PAG does not affect EPA's drinking water standards for radionuclides.

The proposal consists of a two-tier drinking water PAG that would be used during the intermediate phase following a radiation incident: 500 millirem (mrem) (5 milliSievert (mSv)) projected dose for the general population (defined as anyone over age 15, excluding pregnant women and nursing women), and 100 mrem (1 mSv) projected dose for pregnant women, nursing women and children age 15 and under. The tiered approach may help officials prioritize potentially scarce water resources for those most at risk in a disaster response. Once public comments have been addressed, the DW PAG will be folded into the broader PAG Manual – *Protective Action Guides and Planning Guidance for Radiological Incidents* that addresses additional media to provide a comprehensive resource to state and local emergency planning officials.

Adrienne O. Harris
Acting Special Assistant

Office of Ground Water and Drinking Water
(202) 250-8793 (office)

From: Burneson, Eric
Sent: Wednesday, May 18, 2016 10:59 AM
To: Christ, Lisa <Christ.Lisa@epa.gov>; Grevatt, Peter <Grevatt.Peter@epa.gov>
Cc: Harris, Adrienne <Harris.Adrienne@epa.gov>
Subject: RE: Administrator Weekly Email: PAGs (DRAFT)

I would just delete the 2013 from the title of the PAG document since that is the date of the draft PAG.

From: Christ, Lisa
Sent: Wednesday, May 18, 2016 9:10 AM
To: Grevatt, Peter <Grevatt.Peter@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Harris, Adrienne <Harris.Adrienne@epa.gov>
Subject: RE: Administrator Weekly Email: PAGs (DRAFT)

Small edit below

From: Grevatt, Peter
Sent: Tuesday, May 17, 2016 5:54 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>
Cc: Harris, Adrienne <Harris.Adrienne@epa.gov>
Subject: FW: Administrator Weekly Email: PAGs (DRAFT)

Please take a look at my edits in blue below and let Adrienne know if you have any further improvements. Thanks, P.G.

From: Harris, Adrienne
Sent: Tuesday, May 17, 2016 5:30 PM
To: Grevatt, Peter <Grevatt.Peter@epa.gov>
Cc: Greene, Ashley <Greene.Ashley@epa.gov>
Subject: Administrator Weekly Email: PAGs (DRAFT)

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Adrienne O. Harris
Acting Special Assistant

Office of Ground Water and Drinking Water
(202) 250-8793 (office)

To: Burneson, Eric[Burneson.Eric@epa.gov]; Christ, Lisa[Christ.Lisa@epa.gov]
Cc: Harris, Adrienne[Harris.Adrienne@epa.gov]
From: Grevatt, Peter
Sent: Tue 5/17/2016 9:54:22 PM
Subject: FW: Administrator Weekly Email: PAGs (DRAFT)

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Sent: Tuesday, May 17, 2016 5:30 PM
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Adrienne O. Harris
Acting Special Assistant

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(202) 250-8793 (office)

EPA's Draft Drinking Water Protective Action Guidance (PAG) for Radiological Incidents

Desk Statement

During a radiological emergency, such as an accident at a nuclear power plant, radioactive material can be released into the environment. This radioactive material could get into rivers, lakes and streams that are used by public water suppliers to deliver drinking water to residents of towns and cities. Authorities will need guidance to make decisions to protect the public in the weeks and months following the incident. , EPA is proposing a non-regulatory Protective Action Guide (PAG) to help officials determine the best way to prevent the public from experiencing the harmful effects from radiation in drinking water during an emergency.

The purpose of a PAG is to guide the first year of planning and decision-making efforts by local and state officials. It is not intended for long term or everyday use. The proposed PAG does not affect EPA's drinking water standards for radionuclides. Therefore, affected public water systems are expected to take actions to return to compliance with drinking water standards after a radiological emergency as soon as practicable.

EPA is proposing two-tiered approach to address the people at the most sensitive life stage and to address the general population The tiered approach may help officials prioritize potentially scarce water resources for those most at risk in a disaster response.

The proposed PAGs are developed for up to one year of exposure. In comparision the Maximum Contaminant Levels established under SDWA were developed assuming 70 years of continuous exposure. The PAGs are intended to, 1) prevent short-term health effects, 2) balance protection with other important factors that may arise during an emergency (ensuring the actions result in more benefit than harm) and 3) reduce the potential for longer term health effects. In considering these key principles, the EPA is proposing drinking water PAGs of:

- 500 mrem projected dose, for one year, to the general population
- 100 mrem projected, for one year, to the most sensitive populations (e.g. infants, children, pregnant women and nursing women)

EPA is seeking public comment on the proposed protective action guide (PAG) for drinking water following a radiological incident. To submit your comments, please visit [insert regulations.gov link]. Be sure to identify your submission by Docket ID Number EPA-HQ-OAR-2008-0268.

For additional information on protective action guidance, including the revised draft 2013 PAG Manual – *Protective Action Guides and Planning Guidance for Radiological Incidents*, visit: http://www.epa.gov/radiation/protective-action-guides-pags.

Proposed EPA Drinking Water Protective Action Guide for Radiological Emergencies

Information for Public Drinking Water Systems

During an emergency, such as an accident at a nuclear power plant, radioactive material can be released into the environment. This radioactive material could get into rivers, lakes and streams that are used by public water suppliers to deliver drinking water to residents of towns and cities. EPA is proposing a Protective Action Guide (PAG) to prevent the public from receiving harmful effects of radiation that could come from drinking water.

The proposed drinking water protective action guide (PAG) is non-regulatory guidance to protect the public in the event of a radiological incident that affects drinking water supplies. The proposed drinking water PAG will help federal, state, local and public water system officials make decisions about use of water during radiological emergencies.

The proposed drinking water PAG is for use only during an emergency; it is not a substitute for compliance with EPA's National Primary Drinking Water Regulations (NPDWRs) for Radionuclides. EPA expects that any drinking water system adversely impacted during a radiation incident will take action to return to compliance as soon as practicable.

What is a drinking water PAG?

- The drinking water PAG is a health-based tipping point at which alternative drinking water should be provided and the use of contaminated water supplies be restricted.
- The drinking water PAG is based on the projected dose of radiation that could be harmful to a person if exposure to the radiation is not avoided.
- The projected dose levels that would trigger provision of alternative drinking water are:
    - 500 mrem projected dose in the first year for the general population, and
    - 100 mrem projected dose in the first year for the most sensitive populations—infants, children, pregnant women and nursing women.
- PAGs are doses to be avoided; they do not represent "acceptable" routine exposures. PAGs trigger safety measures—in this case, provision of alternative drinking water --to keep doses to the public as low as possible during an emergency.

What actions could water systems take to protect the public from contaminated water?

- Before an emergency occurs, develop a radiological emergency operations plan that is utility-specific. Advance planning can provide clarity and facilitate the decision-making process. Guidance on developing emergency drinking water supplies[1] is available from EPA
- During an emergency, public drinking water systems can:
    - Treat contaminated water
    - Establish interconnections to neighboring systems
    - Blend water sources
    - Work with state or local government authorities to provide water in tanker trucks and/or bottled water

[1] Refer to EPA. *Planning for an Emergency Drinking Water Supply,* EPA 600/R-11/054, June 2011

During an emergency, when and how should water systems sample for radionuclides?

- After a radiological emergency, drinking water systems should collect samples for analysis as soon as it is safe to do so and for several weeks following the event, as needed.
- EPA has rapid analytical methods[2] (non-regulatory) for detecting particular radionuclides in water.
- EPA approved methods must be used for analysis when complying with the NPDWRs for radionuclides.

What are the radionuclides that are likely to be detected in drinking water following a radiological incident?

- The radionuclides that could contaminate water will depend on what type of incident. There are specific radionuclides, such as cesium-137, iodine-131, and strontium-90, which are of particular interest for radiological releases from nuclear power plants.
- Different radionuclides can be associated with other incidents that involve a radiological dispersal device (RDD) or improvised nuclear device (IND). For additional information on the types of radionuclides associated with various types of radiological incidents please visit: http://www.remm.nlm.gov/typesofevents.htm.

How does the drinking water PAG work with EPA's existing Safe Drinking Water Act regulations?

- The drinking water PAG is non-regulatory guidance for emergency situations only.
- Immediately following a radiological incident, public water systems that are classified as community water systems must return to compliance with EPA's Radionuclides Rule[3]. Public water suppliers will be required to take corrective measures to meet radionuclide standards as soon as possible.

How to submit comments on this proposal?

- EPA welcomes written comments on the proposed drinking water PAG. The public will have 45 days to submit comments on this proposal starting the day of its publication in the Federal Register. Be sure to identify your submission by Docket ID Number EPA-HQ-OAR-2008-0268. You can submit comments on-line, by email, by regular mail, or in–person. Detailed instructions for submission of comments are in the Federal Register notice.

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[2] The rapid analysis methods can be located at http://www.epa.gov/narel/rapid_methods.html

[3] For more information about EPA's regulations for radionuclides in drinking water, refer to the Radionuclides Rule: A Quick Reference Guide: http://water.epa.gov/lawsregs/rulesregs/sdwa/radionuclides/upload/2009_04_16_radionuclides_qrg_radionuclides.pdf

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ENVIRONMENTAL PROTECTION AGENCY

[EPA-HQ-OAR-2008-0268; FRL-####-##]

Notice of Availability: Protective Action Guide (PAG) for Drinking Water after a Radiological Incident

AGENCY: Environmental Protection Agency (EPA).

ACTION: Notice of document availability for public comment.

SUMMARY: As part of its mission to protect human health and the environment, the Environmental Protection Agency (EPA) publishes protective action guides to help federal, state, local and tribal emergency response officials make radiation protection decisions during emergencies. The EPA, in coordination with a multi-agency working group within the Federal Radiological Preparedness Coordinating Committee (FRPCC), is proposing an addition to the 2013 revised interim PAG Manual – Protective Action Guides and Planning Guidance for Radiological Incidents ("2013 revised PAG Manual" hereafter) to provide guidance on drinking water.

DATES: Comments must be received on or before 45 days after date of publication in the Federal Register.

ADDRESSES: Submit your comments, identified by Docket ID No. **EPA-HQ-OAR-2008-0268**, by one of the following methods—

- www.regulations.gov: Follow the on-line instructions for submitting comments.
- Email: to a-and-r-docket@epa.gov; Docket ID No. **EPA-HQ-OAR-2008-0268.**
- Fax: (202) 566-1741
- Mail: Air and Radiation Docket and Information Center, Environmental Protection

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Agency, Mail Code: 6102T, 1200 Pennsylvania Ave., NW, Washington, DC 20460

Instructions: Direct your comments to Attn: Docket ID No. **EPA-HQ-OAR-2008-0268.** The Agency's policy is that all comments received will be included in the public docket without change and may be made available online at www.regulations.gov, including any personal information provided, unless the comment includes information claimed to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Do not submit information that you consider to be CBI or otherwise protected through www.regulations.gov or e-mail. The www.regulations.gov website is an "anonymous access" system, which means the EPA will not know your identity or contact information unless you provide it in the body of your comment. If you send an e-mail comment directly to the EPA without going through www.regulations.gov, your e-mail address will be automatically captured and included as part of the comment that is placed in the public docket and made available on the Internet. If you submit an electronic comment, the EPA recommends that you include your name and other contact information in the body of your comment and with any disk or CD-ROM you submit. If the EPA cannot read your comment due to technical difficulties and cannot contact you for clarification, the EPA may not be able to consider your comment. Electronic files should avoid the use of special characters, any form of encryption and be free of any defects or viruses. For additional information about the EPA's public docket, visit the EPA Docket Center homepage at http://www.epa.gov/epahome/dockets.htm.

Docket: All documents in the docket are listed in the www.regulations.gov index. Although listed in the index, some information is not publicly available, e.g., CBI or other information whose disclosure is restricted by statute. Certain other material, such as copyrighted material, will be publicly available only in hard copy. The EPA has established a docket for this action

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under Docket ID No. **EPA-HQ-OAR-2008-0268**. Publicly available docket materials are available either electronically through www.regulations.gov or in hard copy at the Air and Radiation Docket in the EPA Docket Center, (EPA/DC) WJC West, Room 3334, 1301 Constitution Ave., NW, Washington, DC 20004. The EPA Docket Center Public Reading Room is open from 8:30 a.m. to 4:30 p.m., Monday through Friday, excluding legal holidays. The telephone number for the Public Reading Room is (202) 566-1744 and the telephone number for the Air and Radiation Docket is (202) 566-1742. In accordance with the EPA's regulations at 40 CFR Part 2 and in accordance with normal EPA docket procedures, if copies of any docket materials are requested, a reasonable fee may be charged for photocopying.

FOR FURTHER INFORMATION CONTACT: Lisa M. Christ, Standards and Risk Management Division, Office of Ground Water and Drinking Water , Mail Code 4607M, U.S. Environmental Protection Agency, 1200 Pennsylvania Avenue NW, Washington, DC 20460; telephone number: (202) 564-8354; fax number: (202) 564-3758; E-mail: *christ.lisa@epa.gov*.

SUPPLEMENTARY INFORMATION:

1. General Information

A. Does this Action Apply to me?

This action does not impose any requirements on anyone. It notifies interested parties of the EPA's proposed drinking water protective action guide (PAG) and request for public comment. The drinking water PAG will help federal, state, local, tribal officials and public water systems make decisions about use of water during radiological emergencies. The drinking water PAG is non-regulatory guidance.

B. What authority does EPA have to provide Protective Action Guidance?

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The historical and legal basis of the EPA's role in the 2013 PAG Manual begins with Reorganization Plan No. 3 of 1970, in which the Administrator of the EPA assumed all the functions of the Federal Radiation Council (FRC), including the charge to "…advise the President with respect to radiation matters, directly or indirectly affecting health, including guidance for all federal agencies in the formulation of radiation standards and in the establishment and execution of programs of cooperation with states." (Reorg. Plan No. 3 of 1970, sec. 2(a) (7), 6(a) (2); § 274.h of the Atomic Energy Act of 1954, as amended (AEA), codified at 42 U.S.C. § 2021(h)). Recognizing this role, FEMA directed EPA in its Radiological Emergency Planning and Preparedness Regulations to "establish Protective Action Guides (PAGs) for all aspects of radiological emergency planning in coordination with appropriate federal agencies." (44 CFR 351.22(a)). FEMA also tasked the EPA with preparing "guidance for state and local governments on implementing PAGs, including recommendations on protective actions which can be taken to mitigate the potential radiation dose to the population."(44 CFR 351.22(b)). All of this information was to "be presented in the Environmental Protection Agency (EPA) 'Manual of Protective Action Guides and Protective Actions for Nuclear Incidents.'"(44 CFR 351.22(b)).

Additionally, section 2021(h) charged the Administrator with performing "such other functions as the President may assign to him [or her] by Executive order." Executive Order 12656 states that the Administrator shall "[d]evelop, for national security emergencies, guidance on acceptable emergency levels of nuclear radiation…." (Executive Order No. 12656, sec. 1601(2)). EPA's role in PAGs development was reaffirmed by the *National Response Framework, Nuclear/Radiological Incident Annex* of June 2008.

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C. What is the PAG Manual: Protective Action Guides and Planning Guidance for Radiological Incidents?

In 2013, EPA revised the PAG Manual that provides federal, state and local emergency management officials with guidance for responding to radiological emergencies (78 FR 22257, April 15, 2013). See the 2013 PAG Manual at www2.epa.gov/radiation/protective-action-guides-pags. A protective action guide (PAG) is the projected dose to an individual from a release of radioactive material at which a specific protective action to reduce or avoid that dose is recommended. Emergency management officials use PAGs for making decisions regarding actions to protect the public from exposure to radiation during an emergency. Such actions include evacuation, shelter-in-place, temporary relocation, water and food restrictions.

The PAGs are based on the following essential principles, which also apply to the selection of any protective action during an incident:

- Prevent acute effects.
- Balance protection with other important factors and ensure that actions result in more benefit than harm.
- Reduce risk of chronic effects.

The PAG Manual is not a legally binding regulation or standard and does not supersede any environmental laws; PAGs are not intended to define "safe" or "unsafe" levels of exposure or contamination. As indicated by the use of non-mandatory language such as "may," "should" and "can," the Manual only provides recommendations and does not confer any legal rights or impose any legally binding requirements upon any member of the public, states or any federal agency. Rather, the PAG Manual provides projected radiation dose levels at which specific actions are recommended in order to reduce or avoid that dose. The 2013 revised interim PAG

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Manual is designed to provide flexibility to be more or less restrictive as deemed appropriate by decision makers based on the unique characteristics of the incident and the local situation.

D. What additional guidance is being proposed for the PAG Manual?

The drinking water protective action guidance was developed by a multi-agency Subcommittee of the Federal Radiological Preparedness Coordinating Committee and is published by the EPA with concurrence from the Department of Energy, the Department of Defense; the Department of Homeland Security, including the Federal Emergency Management Agency; the Nuclear Regulatory Commission; the Department of Health and Human Services, including both the Centers for Disease Control and Prevention as well as the Food and Drug Administration; the U.S. Department of Agriculture; and the Department of Labor.

A large scale radiation contamination incident could impact the US, driving the need for a pre-established drinking water PAG. The EPA is proposing a two-tiered intermediate phase drinking water PAG of 100 mrem projected dose in the first year for infants, children and pregnant or nursing women and 500 mrem projected dose in the first year for the general population. The proposed PAG is designed to work in concert with the other Protective Action Guides currently in place for other media in the intermediate phase (i.e., the Food and Drug Administration's 500 mrem PAG for ingestion of food) and provides an additional level of protection for the most sensitive life stages. Authorities have flexibility on how to apply the PAG. In some cases they may find it prudent to use a single PAG (e.g., 100 mrem) as a target for the whole population, while in other circumstances, authorities may find that it makes sense to use both targets simultaneously. For example, emergency managers can use a two-tiered approach to focus on protecting the most sensitive population with limited alternate water resources. Because the water and food PAGs are designed to be used in concert, the appropriate

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protective actions will be influenced by the exposure scenario and factors that influence the viability of alternative approaches to reducing dose.

This proposed additional guidance recommends protective actions when drinking water may be impacted by a radiological or nuclear incident. The two-tier approach seeks to balance the goal of keeping radiation doses as low as possible with the practical and logistical challenges of providing alternative drinking water during the response to a disaster. The EPA has included examples of estimated costs for selected drinking water protective actions in the docket. In developing the drinking water PAG, the Agency considered potential cumulative exposure from a radiation incident. Ultimately, a PAG does not represent an "acceptable" routine exposure; a PAG is a dose at which protective action is advised in order to reduce or avoid that dose. Every PAG is developed with the same three principles: prevent acute effects, balance protection with other important factors and ensure that actions result in more benefit than harm and reduce risk of chronic effects. Emergency management officials should consider all exposure routes when making protective action decisions in an emergency.

Under the Safe Drinking Water Act (SDWA), the Agency has established maximum contaminant levels (MCLs) for radiological contaminants in drinking water. The National Primary Drinking Water Regulations (NPDWR) for radionuclides are based on lifetime exposure criteria and assume 70 years of continued exposure to contaminants in drinking water. While the SDWA framework is appropriate for day-to-day normal operations, it may not provide the necessary tools to assist emergency responders with determining the need for an immediate protective action. EPA assumes that any drinking water system adversely impacted during a radiation incident will be able to achieve compliance with MCLs as soon as practicable.

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E. How were comments received on the 2013 draft PAG Manual considered in developing this proposal?

On April 15, 2013, EPA published a Federal Register Notice requesting public comments on the appropriateness of developing and incorporating a drinking water PAG in the revised PAG Manual.

Regarding the specific issue of drinking water, the Agency received about 50 comment letters from members of the public, state and local emergency response and health organizations, environmental advocates, industry associations, organizations opposed to nuclear power, and from national and international radiation protection organizations.

Several commenters from state emergency management agencies and radiation control programs expressed an urgent need for EPA to establish a drinking water PAG pointing out that drinking water is the only media not currently addressed in the PAG manual. Commenters stated that a drinking water PAG is a critical aspect of a coordinated emergency response after a radiation contamination incident.

Commenters representing states agencies from Ohio, Kansas, Pennsylvania, Illinois and Washington suggested that a drinking water PAG should be established at the 500 mrem level, to be consistent with the FDA food PAG and with the DHS guidance[1] for water. While EPA agrees with the need of establishing a drinking water PAG which is consistent with currently available guidance, it is also important to note that EPA believes that when possible PAG recommendations should provide an additional level of protection to sensitive life-stages. For short-term incidents it is appropriate to consider a lower tier PAG level of 100 mrem for sensitive life-stages including pregnant women, nursing women and children 15 years old and

[1] Guidance established by the Department of Homeland Security as an intermediate-level PAG for drinking water interdiction (73 FR 45029).

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under. This approach of setting a two tier level of protection incorporates suggestions submitted by commenters regarding the adequate consideration of children and sensitive subpopulations. There is an abundant precaution built into the derivation of the drinking water PAG through a variety of assumptions, including amount of water consumed, exposure duration, dose-response modeling, and proposing a two-tiered approach, and using the dose-response for the most sensitive to derive the PAG for children through age 15 years. Today's proposal ensures that protective measures are appropriate for all members of the public, including sensitive subpopulations.

In contrast, several commenters from environmental protection advocate organizations suggested that a drinking water PAG is not needed, and urged EPA to defer any emergency response measures regarding drinking water solely on the NPDWR for Radionuclides MCLs. Some commenters expressed concerns that establishing a drinking water PAG would weaken existing environmental standards and regulations. However, the drinking water standards are legal limits designed to prevent health effects from everyday exposure to low levels of radiation over long periods and they are not changing with this proposal.

Estimated risk of excess cancer cases for lifetime exposure (70 years) to radioactive contaminants in drinking water at 4 mrem/yr (the MCL) generally falls in a range of risks deemed acceptable by the Agency's regulations. Estimated risks associated with a shorter (one year) exposure to radioactivity in drinking water at the proposed PAG levels fall within a similar range. Emergency guides are temporary measures to minimize risk while enabling prioritization of limited resources during an emergency response.

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The PAG levels are guidance for emergency situations; they do not supplant any standards or regulations, nor do they affect the stringency or enforcement of any standards or regulations. The PAG levels are intended to be used only in an emergency when radiation levels have already exceeded environmental standards. EPA expects that any drinking water system adversely impacted during a radiation incident will take action to return to compliance with Safe Drinking Water Act (SDWA) levels as soon as practicable.

F. When will the PAG Manual be finalized?

Once comments on this addition have been addressed, EPA will add drinking water guidance to the full PAG Manual which will be issued in final form for incorporation into state, local, tribal and federal emergency response plans over a one-year implementation timeframe.

G. What Should I Consider as I Prepare My Comments for EPA?

1. *Submitting Confidential Business Information (CBI):*

Do not submit this information to the EPA through www.regulations.gov or e-mail. Clearly mark all of the information that you claim to be CBI. For CBI information in a disk or CD ROM that you mail to the EPA, mark the outside of the disk or CD ROM as CBI and then identify electronically within the disk or CD ROM the specific information that is claimed as CBI. In addition to one complete version of the comment that includes information claimed as CBI, a copy of the comment that does not contain the information claimed as CBI must be submitted for inclusion in the public docket. Information marked as CBI will not be disclosed except in accordance with procedures set forth in 40 CFR Part 2.

2. *Tips for Preparing Your Comments:*

When submitting comments, remember to:

- Identify the rulemaking by docket number, subject heading, ***Federal Register*** date and page

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number.

- Follow directions—the EPA may ask you to respond to specific questions or organize comments by referencing the chapter number.
- Explain why you agree or disagree; suggest alternatives and substitute language for your requested changes.
- Describe any assumptions and provide technical information and data that you used.
- If you estimate potential costs or burdens, explain how you arrived at your estimate in sufficient detail to allow it to be reproduced.
- Illustrate your concerns with specific examples and suggest alternatives.
- Explain your views as clearly as possible, avoiding the use of profanity or personal threats.
- Make sure to submit your comments by the comment period deadline identified.

H. What Specific Comments are Being Sought?

While all comments regarding any aspect of the drinking water PAG guidance will be considered, please comment on the following issues specifically—

- Please comment on the appropriateness of the drinking water PAG, the guidance for advance planning and potential implementation challenges associated with the two-tier approach.
- Please comment on what implementation challenges might be associated with the two-tiered approach to the water PAG that EPA should consider and suggest additional guidance that would be helpful.
- Please comment on whether (and if so why) EPA should reconsider using a single-tier drinking water PAG rather than tiered approach proposed today.

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- Please suggest additional guidance that would aid pre-incident planning and implementation specific to your community's drinking water systems.
- Please comment on how this guidance should be implemented in emergency response and recovery plans at all levels of government, including considerations for public communications during an emergency.

In the future, calculations and derived response levels will be provided in the Federal Radiological Monitoring and Assessment Center (FRMAC) Assessment Manuals. Emergency planners are referred to FRMAC Monitoring and Sampling Methods to assess surface and drinking water impacts from a radiological emergency. See the Assessment and Monitoring & Sampling folders at http://www.nv.doe.gov/nationalsecurity/homelandsecurity/frmac/manuals.aspx. After considering public comments, EPA intends to issue a final PAG Manual which will supersede the 1992 PAG Manual and the 2013 revised PAG Manual.

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Dated: __ __, 2016

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Joel Beauvais,

Deputy Assistant Administrator, Office of Water

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EPA's Draft Drinking Water Protective Action Guidance (PAG) for Radiological Incidents

Desk Statement

During a radiological emergency, such as an accident at a nuclear power plant, radioactive material can be released into the environment. This radioactive material could get into rivers, lakes and streams that are used by public water suppliers to deliver drinking water to residents of towns and cities. In order to protect the public, from receiving the harmful effects of radiation in drinking water, EPA is proposing a non-regulatory Protective Action Guide (PAG).

The purpose of a PAG is to guide the first year of planning and decision-making efforts by local and state officials. It is not intended for long term or everyday use. The proposed PAG does not affect EPA's drinking water standards for radionuclides. Therefore, affected public water systems are expected to take actions to return to drinking water standards after a radiological emergency as soon as practicable.

The proposal consists of a two-tiered approach to drinking water guidance. The tiered approach may help officials prioritize potentially scarce water resources for those most at risk in a disaster response.

The proposed projected doses are based on one year of exposure, unlike the SDWA, dose-based MCL, which assumes 70 years of continuous exposure. The PAGs are intended to, 1) prevent short-term health effects, 2) balance protection with other important factors that may arise during an emergency (ensuring the actions result in more benefit than harm) and 3) reduce the potential for longer term health effects. In considering these key principles, the EPA is proposing drinking water PAGs of:

- 500 mrem projected dose, for one year, to the general population
- 100 mrem projected, for one year, to the most sensitive populations (e.g. infants, children, pregnant women and nursing women)

In order to ensure public engagement, EPA is seeking public comment on the proposed protective action guide (PAG) for drinking water following a radiological incident. To submit your comments, please visit [insert regulations.gov link]. Be sure to identify your submission by Docket ID Number EPA-HQ-OAR-2008-0268.

For additional information on protective action guidance, including the revised draft 2013 PAG Manual – *Protective Action Guides and Planning Guidance for Radiological Incidents*, visit: http://www.epa.gov/radiation/protective-action-guides-pags.

To: Christ, Lisa[Christ.Lisa@epa.gov]; Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]
From: Wadlington, Christina
Sent: Mon 5/2/2016 2:14:57 PM
Subject: RE: PAGS

Sounds good. Thanks!

Christina Wadlington

Communications Director

Office of Ground Water and Drinking Water

U.S. Environmental Protection Agency

Tel: 202.566.1859

Email: wadlington.christina@epa.gov

From: Christ, Lisa
Sent: Monday, May 02, 2016 10:14 AM
To: Wadlington, Christina <Wadlington.Christina@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Subject: RE: PAGS

I do not have an update. Our response to comments is with OMB (recvd 4/22) for their review and sign off.

From: Wadlington, Christina
Sent: Monday, May 02, 2016 9:56 AM
To: Christ, Lisa <Christ.Lisa@epa.gov>; Hernandez-Quinones, Samuel

<Hernandez.Samuel@epa.gov>
Subject: PAGS

Is there an update on PAGS? Just need to ensure this is correct for the Administrator Weekly.

As early as early May, pending completion of OMB review, EPA plans to release a proposed Protective Action Guide for drinking water, which would provide non-regulatory guidance for drinking water emergencies caused by radiological incidents.

Christina Wadlington

Communications Director

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To: Christ, Lisa[Christ.Lisa@epa.gov]; Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]
From: Wadlington, Christina
Sent: Mon 5/2/2016 1:55:40 PM
Subject: PAGS

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As early as early May, pending completion of OMB review, EPA plans to release a proposed Protective Action Guide for drinking water, which would provide non-regulatory guidance for drinking water emergencies caused by radiological incidents.

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ENVIRONMENTAL PROTECTION AGENCY

[EPA-HQ-OAR-2008-0268; FRL-####-##]

Notice of Availability: Protective Action Guide (PAG) for Drinking Water after a Radiological Incident

AGENCY: Environmental Protection Agency (EPA).

ACTION: Notice of document availability for public comment.

SUMMARY: As part of its mission to protect human health and the environment, the Environmental Protection Agency (EPA) publishes protective action guides to help federal, state, local and tribal emergency response officials make radiation protection decisions during emergencies. The EPA, in coordination with a multi-agency working group within the Federal Radiological Preparedness Coordinating Committee (FRPCC), is proposing an addition to the 2013 revised PAG Manual – Protective Action Guides and Planning Guidance for Radiological Incidents ("2013 revised PAG Manual" hereafter) to provide guidance on drinking water.

DATES: Comments must be received on or before 45 days after date of publication in the Federal Register.

ADDRESSES: Submit your comments, identified by Docket ID No. **EPA-HQ-OAR-2008-0268**, by one of the following methods—

- www.regulations.gov: Follow the on-line instructions for submitting comments.
- Email: to a-and-r-docket@epa.gov; Docket ID No. **EPA-HQ-OAR-2008-0268.**
- Fax: (202) 566-1741
- Mail: Air and Radiation Docket and Information Center, Environmental Protection Agency, Mail Code: 6102T, 1200 Pennsylvania Ave., NW, Washington, DC 20460

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Instructions: Direct your comments to Attn: Docket ID No. **EPA-HQ-OAR-2008-0268.** The Agency's policy is that all comments received will be included in the public docket without change and may be made available online at www.regulations.gov, including any personal information provided, unless the comment includes information claimed to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Do not submit information that you consider to be CBI or otherwise protected through www.regulations.gov or e-mail. The www.regulations.gov website is an "anonymous access" system, which means the EPA will not know your identity or contact information unless you provide it in the body of your comment. If you send an e-mail comment directly to the EPA without going through www.regulations.gov, your e-mail address will be automatically captured and included as part of the comment that is placed in the public docket and made available on the Internet. If you submit an electronic comment, the EPA recommends that you include your name and other contact information in the body of your comment and with any disk or CD-ROM you submit. If the EPA cannot read your comment due to technical difficulties and cannot contact you for clarification, the EPA may not be able to consider your comment. Electronic files should avoid the use of special characters, any form of encryption and be free of any defects or viruses. For additional information about the EPA's public docket, visit the EPA Docket Center homepage at http://www.epa.gov/epahome/dockets.htm.

Docket: All documents in the docket are listed in the www.regulations.gov index. Although listed in the index, some information is not publicly available, e.g., CBI or other information whose disclosure is restricted by statute. Certain other material, such as copyrighted material, will be publicly available only in hard copy. The EPA has established a docket for this action under Docket ID No. **EPA-HQ-OAR-2008-0268**. Publicly available docket materials are

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available either electronically through www.regulations.gov or in hard copy at the Air and Radiation Docket in the EPA Docket Center, (EPA/DC) WJC West, Room 3334, 1301 Constitution Ave., NW, Washington, DC 20004. The EPA Docket Center Public Reading Room is open from 8:30 a.m. to 4:30 p.m., Monday through Friday, excluding legal holidays. The telephone number for the Public Reading Room is (202) 566-1744 and the telephone number for the Air and Radiation Docket is (202) 566-1742. In accordance with the EPA's regulations at 40 CFR Part 2 and in accordance with normal EPA docket procedures, if copies of any docket materials are requested, a reasonable fee may be charged for photocopying.

FOR FURTHER INFORMATION CONTACT: Lisa M. Christ, Standards and Risk Management Division, Office of Ground Water and Drinking Water , Mail Code 4607M, U.S. Environmental Protection Agency, 1200 Pennsylvania Avenue NW, Washington, DC 20460; telephone number: (202) 564-8354; fax number: (202) 564-3758; E-mail: *christ.lisa@epa.gov*.

SUPPLEMENTARY INFORMATION:

1. General Information

A. Does this Action Apply to me?

This action does not impose any requirements on anyone. It notifies interested parties of the EPA's proposed drinking water protective action guide (PAG) and request for public comment. The drinking water PAG will help federal, state, local, tribal officials and public water systems make decisions about use of water during radiological emergencies. The drinking water PAG is non-regulatory guidance.

B. What authority does EPA have to provide Protective Action Guidance?

The historical and legal basis of the EPA's role in the 2013 PAG Manual begins with Reorganization Plan No. 3 of 1970, in which the Administrator of the EPA assumed all the

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functions of the Federal Radiation Council (FRC), including the charge to "…advise the President with respect to radiation matters, directly or indirectly affecting health, including guidance for all federal agencies in the formulation of radiation standards and in the establishment and execution of programs of cooperation with states." (Reorg. Plan No. 3 of 1970, sec. 2(a) (7), 6(a) (2); § 274.h of the Atomic Energy Act of 1954, as amended (AEA), codified at 42 U.S.C. § 2021(h)). Recognizing this role, FEMA directed EPA in its Radiological Emergency Planning and Preparedness Regulations to "establish Protective Action Guides (PAGs) for all aspects of radiological emergency planning in coordination with appropriate federal agencies." (44 CFR 351.22(a)). FEMA also tasked the EPA with preparing "guidance for state and local governments on implementing PAGs, including recommendations on protective actions which can be taken to mitigate the potential radiation dose to the population."(44 CFR 351.22(b)). All of this information was to "be presented in the Environmental Protection Agency (EPA) 'Manual of Protective Action Guides and Protective Actions for Nuclear Incidents.'"(44 CFR 351.22(b)).

Additionally, section 2021(h) charged the Administrator with performing "such other functions as the President may assign to him [or her] by Executive order." Executive Order 12656 states that the Administrator shall "[d]evelop, for national security emergencies, guidance on acceptable emergency levels of nuclear radiation…." (Executive Order No. 12656, sec. 1601(2)). EPA's role in PAGs development was reaffirmed by the *National Response Framework, Nuclear/Radiological Incident Annex* of June 2008.

C. What is the PAG Manual: Protective Action Guides and Planning Guidance for Radiological Incidents?

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In 2013, EPA revised the PAG Manual that provides federal, state and local emergency management officials with guidance for responding to radiological emergencies (78 FR 22257, April 15, 2013). See the 2013 PAG Manual at www2.epa.gov/radiation/protective-action-guides-pags. A protective action guide (PAG) is the projected dose to an individual from a release of radioactive material at which a specific protective action to reduce or avoid that dose is recommended. Emergency management officials use PAGs for making decisions regarding actions to protect the public from exposure to radiation during an emergency. Such actions include evacuation, shelter-in-place, temporary relocation, water and food restrictions.

The PAGs are based on the following essential principles, which also apply to the selection of any protective action during an incident:

- Prevent acute effects.
- Balance protection with other important factors and ensure that actions result in more benefit than harm.
- Reduce risk of chronic effects.

The PAG Manual is not a legally binding regulation or standard and does not supersede any environmental laws; PAGs are not intended to define "safe" or "unsafe" levels of exposure or contamination. As indicated by the use of non-mandatory language such as "may," "should" and "can," the Manual only provides recommendations and does not confer any legal rights or impose any legally binding requirements upon any member of the public, states or any federal agency. Rather, the PAG Manual provides projected radiation dose levels at which specific actions are recommended in order to reduce or avoid that dose. The 2013 revised PAG Manual is designed to provide flexibility to be more or less restrictive as deemed appropriate by decision makers based on the unique characteristics of the incident and the local situation.

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D. What additional guidance is being proposed for the PAG Manual?

The drinking water protective action guidance was developed by a multi-agency Subcommittee of the Federal Radiological Preparedness Coordinating Committee and is published by the EPA with concurrence from the Department of Energy, the Department of Defense; the Department of Homeland Security, including the Federal Emergency Management Agency; the Nuclear Regulatory Commission; the Department of Health and Human Services, including both the Centers for Disease Control and Prevention as well as the Food and Drug Administration; the U.S. Department of Agriculture; and the Department of Labor.

A large scale radiation contamination incident could impact the US, driving the need for a pre-established drinking water PAG. The EPA is proposing a two-tiered intermediate phase drinking water PAG of 100 mrem projected dose in the first year for infants, children and pregnant or nursing women and 500 mrem projected dose in the first year for the general population. The proposed PAG is consistent with the other Protective Action Guides currently in place for other media in the intermediate phase (i.e., the Food and Drug Administration's 500 mrem PAG for ingestion of food) and provides an additional level of protection for the most sensitive life stages. Authorities have flexibility on how to apply the PAG. In some cases they may find it prudent to use the PAG of 100 mrem as a target for the whole population, while in other circumstances, authorities may find that it makes sense to use both targets simultaneously. For example, emergency managers can use a two-tiered approach to focus on protecting the most sensitive population with limited alternate water resources.

This proposed additional guidance recommends protective actions when drinking water may be impacted by a radiological or nuclear incident. The two-tier approach seeks to balance the goal of keeping radiation doses as low as possible with the practical and logistical challenges of

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providing alternative drinking water during the response to a disaster. In developing the drinking water PAG, the Agency considered potential cumulative exposure from a radiation incident. Ultimately, a PAG does not represent an "acceptable" routine exposure; a PAG is a dose to be avoided. Every PAG is developed with the same three principles: prevent acute effects, balance protection with other important factors and ensure that actions result in more benefit than harm and reduce risk of chronic effects. Emergency management officials should consider all exposure routes when making protective action decisions in an emergency.

Under the Safe Drinking Water Act (SDWA), the Agency has established maximum contaminant levels (MCLs) for radiological contaminants in drinking water. The National Primary Drinking Water Regulations (NPDWR) for radionuclides are based on lifetime exposure criteria and assume 70 years of continued exposure to contaminants in drinking water. While the SDWA framework is appropriate for day-to-day normal operations, it may not provide the necessary tools to assist emergency responders with determining the need for an immediate protective action. EPA assumes that any drinking water system adversely impacted during a radiation incident will be able to achieve compliance with MCLs as soon as practicable.

E. How were comments received on the 2013 draft PAG Manual considered in developing this proposal?

On April 15, 2013 EPA published a Federal Register Notice requesting public comments on the appropriateness of developing and incorporating a drinking water PAG in the revised PAG Manual.

Regarding the specific issue of drinking water, the Agency received about 50 comment letters from members of the public, state and local emergency response and health organizations, environmental advocates, industry associations, organizations opposed to nuclear power, and

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from national and international radiation protection organizations.

Several commenters asked EPA for the urgent need to establish a drinking water PAG pointing out that drinking water is the only media not currently addressed in the PAG manual. Commenters stated that a drinking water PAG is a critical aspect of a coordinated emergency response after a radiation contamination incident.

Some commenters suggested that a drinking water PAG should be established at the 500 mrem level, to be consistent with the FDA food PAG and with the DHS guidance[1] for water. While EPA agrees with the need of establishing a drinking water PAG which is consistent with currently available guidance, it is also important to note that EPA believes that when possible PAG recommendations should provide an additional level of protection to sensitive life-stages. For short-term incidents it is appropriate to consider a lower tier PAG level of 100 mrem for sensitive life-stages including pregnant women and children 15 years old and under. This approach of setting a two tier level of protection incorporates suggestions submitted by commenters regarding the adequate consideration of children and sensitive subpopulations. There is an abundant conservatism built into the derivation of the drinking water PAG, and particularly in the assumptions used to generate derived response levels. Today's proposal ensures that protective measures are appropriate for all members of the public, including sensitive subpopulations.

In contrast, several commenters suggested that a drinking water PAG is not needed, and urged EPA to defer any emergency response measures regarding drinking water solely on the National Primary Drinking Water Regulation for Radionuclides maximum contaminant levels (MCLs). Some commenters expressed concerns that establishing a drinking water PAG would

[1] Guidance established by the Department of Homeland Security as an intermediate-level PAG for drinking water interdiction (73 FR 45029).

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weaken existing environmental standards and regulations.

However, the drinking water standards are legal limits designed to prevent health effects from everyday exposure to low levels of radiation over long periods. The PAG levels are guidance for emergency situations; they do not supplant any standards or regulations, nor do they affect the stringency or enforcement of any standards or regulations. The PAG levels are intended to be used only in an emergency when radiation levels have already exceeded environmental standards and could be high enough to cause health effects unless protective actions are taken. EPA expects that any drinking water system adversely impacted during a radiation incident will take action to return to compliance with Safe Drinking Water Act (SDWA) levels as soon as practicable.

F. When will the PAG Manual be finalized?

Once comments on this addition have been addressed, EPA will add drinking water guidance to the full PAG Manual which will be issued in final form for incorporation into state, local, tribal and federal emergency response plans over a one-year implementation timeframe.

G. What Should I Consider as I Prepare My Comments for EPA?

1. *Submitting Confidential Business Information (CBI):*

Do not submit this information to the EPA through www.regulations.gov or e-mail. Clearly mark all of the information that you claim to be CBI. For CBI information in a disk or CD ROM that you mail to the EPA, mark the outside of the disk or CD ROM as CBI and then identify electronically within the disk or CD ROM the specific information that is claimed as CBI. In addition to one complete version of the comment that includes information claimed as CBI, a copy of the comment that does not contain the information claimed as CBI must be submitted for inclusion in the public docket. Information marked as CBI will not be disclosed except in

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accordance with procedures set forth in 40 CFR Part 2.

2. *Tips for Preparing Your Comments:*

When submitting comments, remember to:

- Identify the rulemaking by docket number, subject heading, ***Federal Register*** date and page number.
- Follow directions—the EPA may ask you to respond to specific questions or organize comments by referencing the chapter number.
- Explain why you agree or disagree; suggest alternatives and substitute language for your requested changes.
- Describe any assumptions and provide technical information and data that you used.
- If you estimate potential costs or burdens, explain how you arrived at your estimate in sufficient detail to allow it to be reproduced.
- Illustrate your concerns with specific examples and suggest alternatives.
- Explain your views as clearly as possible, avoiding the use of profanity or personal threats.
- Make sure to submit your comments by the comment period deadline identified.

H. What Specific Comments are Being Sought?

While all comments regarding any aspect of the drinking water PAG guidance will be considered, please comment on the following issues specifically—

- Please comment on the appropriateness of the drinking water PAG, the guidance for advance planning and potential implementation challenges associated with the two-tier approach.
- Please comment on the option of EPA selecting a single-tier drinking water PAG rather than the two-tier PAG proposed today.

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- Please suggest additional guidance that would aid pre-incident planning and implementation specific to your community's drinking water systems.
- Please comment on how this guidance should be implemented in emergency response and recovery plans at all levels of government, including considerations for public communications during an emergency.

In the future, calculations and derived response levels will be provided in the Federal Radiological Monitoring and Assessment Center (FRMAC) Assessment Manuals. Emergency planners are referred to FRMAC Monitoring and Sampling Methods to assess surface and drinking water impacts from a radiological emergency. See the Assessment and Monitoring & Sampling folders at http://www.nv.doe.gov/nationalsecurity/homelandsecurity/frmac/manuals.aspx. After considering public comments, EPA intends to issue a final PAG Manual which will supersede the 1992 PAG Manual and the 2013 revised PAG Manual.

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Dated: __ __, 2016

_____

Joel Beauvais,

Deputy Assistant Administrator, Office of Water

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To: Christ, Lisa[Christ.Lisa@epa.gov]
From: Hernandez-Quinones, Samuel
Sent: Mon 4/11/2016 2:27:14 PM
Subject: Re: PAG summary of OMB comments for Joel
Revised PAG for DW_After OMB_4-6-16.docx

Ok, I will incorporate the placeholder.

Also, here is the draft revised proposal.

Thanks

Sam

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Environmental Protection Agency
Office of Water
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Christ, Lisa
Sent: Monday, April 11, 2016 10:11 AM
To: Hernandez-Quinones, Samuel
Subject: FW: PAG summary of OMB comments for Joel

FYI – waiting for comments from Peter.

Please finalize the response to comment document with a placeholder for the responses in this attachment. Also, send me the revised proposal so I can start my review and get it to Peter asap. I'm waiting for AI to provide comments on the qualitative analysis.

Thanks-

Lisa

From: Christ, Lisa
Sent: Monday, April 11, 2016 8:13 AM
To: Greene, Ashley <Greene.Ashley@epa.gov>
Subject: PAG summary of OMB comments for Joel

Hi Ashley,

Attached is the revised summary of PAG comments based on input from Peter. I assume Peter will want to review before this goes to Joel?

Thanks-

Lisa

To: Christ, Lisa[Christ.Lisa@epa.gov]
From: Hernandez-Quinones, Samuel
Sent: Thur 4/7/2016 9:22:22 PM
Subject: Revised Briefing Document
Beauvais Briefing Document DW PAG Interagency Comments 4-7-16 SHQ.docx

Hi Lisa,

Attached is the revised briefing document based on my notes from our discussion with Eric and Peter.

Let me know if you have any comments.

Thank You

Sam

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water

Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

Wed Dec 23 09:22:56 EST 2015
Labbe.Ken@epamail.epa.gov
FW: Letter from organizations opposing weakened radioactive water PAGs and requesting a meeting with OMB
To: CMS.OEX@epamail.epa.gov

From: Diane D'Arrigo [mailto:dianed@nirs.org]
Sent: Tuesday, December 22, 2015 6:54 PM
To: hshelanski@omb.eop.gov; jlaity@omb.eop.gov; mechols@omb.eop.gov
Cc: Mccarthy, Gina <McCarthy.Gina@epa.gov>; McCabe, Janet <McCabe.Janet@epa.gov>; Stoner, Nancy <Stoner.Nancy@epa.gov>; aastanislaus <aastanislaus@epa.gov>; Michal_Freedhoff@markey.senate.gov; bettina_poirier@epw.senate.gov; Diane D'Arrigo <dianed@nirs.org>; McKinzie, Matthew <mmcKinzie@nrdc.org>; Allison Fisher <afisher@citizen.org>; Catherine Thomasson <CThomasson@psr.org>; Damon Moglen <dmoglen@foe.org>; Cindy Folkers (cindy@beyondnuclear.org) <cindy@beyondnuclear.org>; Jeff Ruch (jruch@peer.org) <jruch@peer.org>; Anna Aurilio <asquared@environmentamerica.org>; Deborah Brancato (dbrancato@riverkeeper.org) <dbrancato@riverkeeper.org>; Wenonah Hauter (whauter@fwwatch.org) <whauter@fwwatch.org>; Lynn Thorp CWA <lthorp@cleanwater.org>; Dan Hirsch 2 <dhirsch1@cruzio.com>
Subject: Letter from organizations opposing weakened radioactive water PAGs and requesting a meeting with OMB

RE: EPA Protective Action Guidance, Radionuclides in Water

Administrator Shelanski

Director Jim Laity

Records Management Specialist Mabel Echols:

Please find pasted below, and attached, a letter from a dozen organizations regarding a proposed weakening of radiation protection standards for drinking water, recently submitted by EPA to OMB, and our request for a meeting on the subject before OMB acts. I have also attached a 2013 letter to EPA discussing their options at that time which would increase allowable radioactivity in drinking water to levels far in excess of Safe Drinking Water Act limits.

If you would like additional information or clarification, please let me know. I look forward to coordinating a meeting in the New Year on this important matter.

Sincerely,

Diane D'Arrigo

Nuclear Information and Resource Service

dianed@nirs.org

301 270 6477 x 15

Mobile 202 841 8588

(Point of Contact for Organizations listed)

Physicians for Social Responsibility wNatural Resources Defense Council

Friends of the Earth wFood and Water Watch

Clean Water Action wPublic Citizen wBeyond Nuclear

Public Employees for Environmental Responsibility

Nuclear Information and Resource Service

Environment America wRiverkeeper

Committee to Bridge the Gap

Howard Shelanski, Administrator

Office of Information and Regulatory Affairs

Office of Management and Budget

725 17th Street, NW

Washington, DC 20503

December 22, 2015

Re: Proposed Amendments to EPA Protective Action Guidance (RIN 2060-ZA19)

Dear Administrator Shelanski:

On December 5 of this year, OMB received for review from the US EPA proposed changes to its Protective Action Guides (PAGs) for responding to radiological releases. Press reports indicate that the proposals would markedly increase the levels of allowable radioactive contaminants in drinking water. We write to inform you that such an effort would be met with a firestorm of controversy, and urge that the proposals be rejected. We also request a meeting/conference call with your senior staff tasked with the review.

Currently, protective actions are to be taken when radionuclide concentrations in drinking water exceed the Maximum Contaminant Limits of the Safe Drinking Water Act. Legal constraints (anti-backsliding requirements) prohibit EPA from relaxing those limits. However, there has been a long-standing push to undermine the Safe Drinking Water Act and allow vastly higher concentrations of radioactivity in water people consume.

This action, however, was too controversial for EPA to take when it published its PAGs a couple of years ago. So EPA published the PAGs without changing the water limits, but indicated it was interested at some time in the future in considering breaching the Safe Drinking Water Act limits for PAG purposes. We presume that that is what EPA has now transmitted to OMB for approval. This could result in the public being forced to consume water with concentrations of radionuclides hundreds or even thousands of times higher than considered acceptable under the Safe Drinking Water Act.

We want to alert you that such a proposal would be extraordinarily controversial. Scores of groups opposed such possible action in the past, and we believe this would be a high visibility matter of substantial concern to legislators, the news media, and the public. People would be extremely upset when they learn that the Obama Administration is contemplating imposing consumption of water with vastly higher concentrations of radioactivity than considered acceptable under the Safe Drinking Water Act.

Furthermore, the claim that there is no significant economic impact is incorrect. Were the Administration to force this proposal through, and a radiological release contaminated water far above longstanding acceptable levels, protective actions might not be taken. People would have to consume highly radioactive water. The affected area would likely shut down. Schools would close; businesses would be shuttered; people would move out rather than drink water with radioactivity concentrations far above what has been historically considered acceptable.

We ask you to not approve the extraordinarily controversial proposal, and we request a meeting or conference call to discuss the troubling nature of what is quietly being put forward.

Sincerely,

Daniel Hirsch, President

Committee to Bridge the Gap

Diane D'Arrigo, Director*

Radioactive Waste Project

Nuclear Information and Resource Service

Wenonah Hauter, Executive Director

Food and Water Watch

Catherine Thomasson, M.D.

Executive Director

Physicians for Social Responsibility

Damon Moglen, Senior Strategic Advisor

Friends of the Earth

Anna Aurilio, Washington DC Office Director

Environment America

Jeff Ruch, Executive Director

Public Employees for Environmental Responsibility

Matthew McKinzie, Ph.D.

Director, Nuclear Program

Natural Resources Defense Council

Lynn Thorp, National Campaigns Director

Clean Water Action

Deborah Brancato, Staff Attorney

Riverkeeper

Allison Fisher, Outreach Director

Public Citizen

Cindy Folkers, Radiation Specialist

* *Point of contact*: Diane D'Arrigo 301-270-6477 x 15 dianed@nirs.org

---

cc: Senator Ed Markey

Senator Barbara Boxer

EPA Administrator Gina McCarthy

Janet McCabe, EPA Assistant Administrator, Office of Air and Radiation

Nancy Stoner, EPA Assistant Administrator, Office of Water

Mathy Stanislaus, EPA Assistant Administrator, Office of Solid Waste and Emergency Response

Jim Laity, OIRA, Natural Resources & Environment Branch

Mabel Echols, OIRA, Records Management Specialist

Physicians for Social Responsibility ◆ Natural Resources Defense Council
Friends of the Earth ◆Food and Water Watch
Clean Water Action ◆Public Citizen ◆Beyond Nuclear
Public Employees for Environmental Responsibility
Nuclear Information and Resource Service
Environment America ◆ Riverkeeper
Committee to Bridge the Gap

Howard Shelanski, Administrator
Office of Information and Regulatory Affairs
Office of Management and Budget
725 17th Street, NW
Washington, DC 20503

December 22, 2015

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Currently, protective actions are to be taken when radionuclide concentrations in drinking water exceed the Maximum Contaminant Limits of the Safe Drinking Water Act. Legal constraints (anti-backsliding requirements) prohibit EPA from relaxing those limits. However, there has been a long-standing push to undermine the Safe Drinking Water Act and allow vastly higher concentrations of radioactivity in water people consume.

This action, however, was too controversial for EPA to take when it published its PAGs a couple of years ago. So EPA published the PAGs without changing the water limits, but indicated it was interested at some time in the future in considering breaching the Safe Drinking Water Act limits for PAG purposes. We presume that that is what EPA has now transmitted to OMB for approval. This could result in the public being forced to consume water with concentrations of radionuclides hundreds or even thousands of times higher than considered acceptable under the Safe Drinking Water Act.

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consumption of water with vastly higher concentrations of radioactivity than considered acceptable under the Safe Drinking Water Act.

Furthermore, the claim that there is no significant economic impact is incorrect. Were the Administration to force this proposal through, and a radiological release contaminated water far above longstanding acceptable levels, protective actions might not be taken. People would have to consume highly radioactive water. The affected area would likely shut down. Schools would close; businesses would be shuttered; people would move out rather than drink water with radioactivity concentrations far above what has been historically considered acceptable.

We ask you to not approve the extraordinarily controversial proposal, and we request a meeting or conference call to discuss the troubling nature of what is quietly being put forward.

Sincerely,

Daniel Hirsch, President
Committee to Bridge the Gap

Diane D'Arrigo, Director*
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Nuclear Information and Resource Service

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Riverkeeper

Allison Fisher, Outreach Director
Public Citizen

Cindy Folkers, Radiation Specialist
Beyond Nuclear

* *Point of contact*: Diane D'Arrigo 301-270-6477 x 15 dianed@nirs.org

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cc: Senator Ed Markey
Senator Barbara Boxer
EPA Administrator Gina McCarthy
Janet McCabe, EPA Assistant Administrator, Office of Air and Radiation
Nancy Stoner, EPA Assistant Administrator, Office of Water
Mathy Stanislaus, EPA Assistant Administrator, Office of Solid Waste and Emergency Response
Jim Laity, OIRA, Natural Resources & Environment Branch
Mabel Echols, OIRA, Records Management Specialist

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September 16, 2013

The Honorable Gina McCarthy
Administrator
U.S. Environmental Protection Agency
Ariel Rios Building
1200 Pennsylvania Ave., N.W.
Washington, DC 20460
McCarthy.gina@Epa.gov

US EPA Air and Radiation Docket and Information Center
Mail Code: 6102T, 1200 Pennsylvania Ave NW, Washington, DC 20460
a-and-r-docket@epa.gov; www.regulations.gov

Re: Protective Action Guides for Radionuclides (Docket ID No. EPA–HQ–OAR–2007–0268)

Dear Administrator McCarthy:

We write to express our concern about and opposition to key aspects of the revised Protective Action Guides (PAGs) for responding to releases of radioactivity. PAGs identify radiation doses that are to trigger actions to protect the public so as to avoid public exposures in excess of those doses. As such, the PAGs are critical for public protection; weak PAGs can significantly endanger the public.

On 15 April 2013 the Agency published in the *Federal Register* a request for public comment on the proposed PAG revisions; 78 FR 22257-60. Simultaneously, however, EPA made the new PAGs immediately effective, raising questions about whether the public comment opportunity is *pro forma* or serious.

Nonetheless, we respectfully submit this delineation of significant problems in the PAGs. Many of our organizations opposed efforts by EPA in the last days of the George W. Bush Administration to issue PAGs that would have substantially weakened radiation protections for the public by, for example, increasing dramatically the amount of radioactivity permitted in drinking water and in soil. We were gratified when the Obama Administration in its first days in office withdrew the Bush-era PAG proposal and promised a thorough review.

The current Obama PAGs now issued are in many respects as troubling as the Bush proposal, and in some particulars, even weaker in terms of public health protection. Some cosmetic changes have been made—e.g. vaguer language is used which may have the same disturbing effect. But at their core, rather than specifying protective actions to prevent public exposures, the PAGs would allow massive radiation exposures without any protective actions being recommended to limit them. We recommend the PAGs be withdrawn.

Our primary concerns are: (1) the proposal to allow, for one to several years after a release, radioactive contamination of drinking water at levels orders of magnitude above EPA's longstanding Safe Drinking Water Act (SDWA) limits, (2) language contemplating long-term cleanup standards vastly less protective than EPA's historically acceptable risk range, (3) the elimination of relocation PAGs for high thyroid and skin doses and for high projected cumulative whole body doses, (4) the recommendation to permit radioactive waste to be disposed of in unlicensed disposal sites, including regular municipal garbage dumps, (5) the inappropriate expansion of the PAGs to cover essentially all radioactive releases, from the most extraordinary (e.g. nuclear weapons explosions) to those far less consequential (e.g. transportation accidents involving relatively small amounts of radioactivity), (6) relying on PAG dose limits as high or higher than those in effect decades ago despite the fact that official estimates of cancer risks from radiation have increased significantly over that period, and (7) apparently un-reviewed retention of archaic and extremely high FDA food contamination guidelines.

Background

During the George W. Bush Administration, the Department of Homeland Security (DHS) issued PAGs for responding to the use by a terrorist group of an Improvised Nuclear Device (IND) or a "dirty bomb," a Radiological Dispersal Device (RDD). The DHS PAGs were very controversial. Many of us joined in critical comments.[1]

The DHS PAGs recommended not setting any standard for long-term cleanup but rather adopted a vague process called "optimization" in which the economic interest in not spending money on cleanup could outweigh the public health need to do so. No health-based standard would be established in advance in the PAGs, so decisions about how much to clean up would be made after the fact, selecting from various contradictory "benchmarks" from national or international advisory committees. Those entities are often heavily dominated by nuclear interests and have pressed for not requiring cleanup until doses reach extraordinary levels.

One of the benchmarks considered was *to not undertake cleanup* if the dose to the public were less than 1 rem (1000 mrem) per year (the equivalent of approximately 15,000 chest X-rays over thirty years) and *to only require cleanup over 10 rem per year* (roughly 150,000 chest X-rays over the same period), with discretion to not undertake cleanup when exposures are between those two doses.[2] According to the EPA's own current risk estimates per unit dose in its most recent "Blue Book,"[3] derived from the National Academy of Sciences' Report on the Biological

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[1] See, e.g., group comment letter of 14 April 2006 and letters to then -EPA Administrator Le avitt of 2 December 2004 and 27 January 2005, attachments found , beginning at pg. 155, at http://committeetobridgethegap.org/wp -content/uploads/2013/04/080509LetterToEPAbr5.pdf and incorporated herein by reference.

[2] The adult dose from a PA (posterior-anterior or front) view chest X-ray is typically 2 millirem.

[3] *EPA Radiogenic Cancer Risk Models and Projections for the U.S. Population,* EPA 402-R-11-001, April 2011. The Blue Book sets the excess cancer risk at an age - and sex-averaged value of 1.16×10^{-1} per Gray, with the first 30 years of life the risk being approxi mately 1.8 times higher. EPA standard practice when one doesn't consider lifetime exposure is to presume exposure over the first 30 years of life for residential scenarios and over the first 40 years for farmer scenarios.

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Effects of Ionizing Radiation (BEIR VII), 1 rem per year over the first thirty years of life would result is an excess cancer in every 17th person exposed.[4] At 10 rem/year, EPA's own estimate is that one in every 1.7 people exposed would get a cancer from the radiation.[5] Allowing such high numbers of cancers to be produced from exposure to contamination would obviously be orders of magnitude beyond risks EPA has ever considered acceptable.

The DHS PAGs also recommended allowing radioactive contamination of drinking water at levels far higher than the SDWA allows.[6] Despite the substantial public opposition, the Bush Administration adopted the DHS PAGs.

Subsequent to the issuance of the DHS PAGs, EPA attempted to extend these weakened standards from terrorist events to non-terrorist events and indeed, to all radiological releases. In the EPA proposed PAGs, "optimization" was included for long-term cleanup and actual radionuclide concentrations were put forward for drinking water. Those drinking water levels were orders of magnitude higher than EPA's Safe Drinking Water Act. For some radionuclides, EPA was proposing to allow people to drink water contaminated to such a high level that drinking a single small glass would exceed a lifetime permitted consumption under the SDWA, according to internal EPA analyses obtained under the Freedom of Information Act. [7] Independent analyses confirmed this, showing that the proposed drinking water levels were, depending on the radionuclide, hundreds, thousands, tens of thousands, and hundreds of thousands of times higher than the SDWA limits.[8]

The EPA PAGs that the outgoing Bush Administration tried to publish in its last days in office also would have adopted the deeply troubling DHS "optimization" process for long-term cleanup. Furthermore, the applicability of the PAGs would have been extended to *all* radioactive releases.

Recognizing the highly problematic aspects of these proposals by the outgoing Administration, the Obama Administration withdrew them and promised a full and careful review. We were thus hopeful that when new PAGs were released, they would be truly protective. We have been deeply disappointed.

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[4] 1 rem/year x 30 years x 2 x 1 0-3 cancers per rem during the first 30 years = 6 x 10 -2 cancers = 1 cancer per 17 people exposed.

[5] These are gender-averaged risk figures. Females are at even greater risk than males from the same levels of exposure meaning their risks are even higher than these estimates.

[6] The DHS PAGs recommended a high dose level for radiation from drinking water but did not provide specific concentrations for individual radionuclides .

[7] http://www.peer.org/news/news -releases/2010/04/05/radiation -exposure-debate-rages-inside-epa/

[8] See Hirsch and Marx, *Proposed Relaxation of EPA Drinking Water Standards for Radioactivity,* Committee to Bridge the Gap, October 2008, found as an attachment to the URL identified in footnote 1 above and incorporated herein by reference.

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1. <u>The PAGs Propose Allowing Radioactive Contamination of Drinking Water That Would Be Orders of Magnitude Higher than EPA's Longstanding Safe Drinking Water Act Limits</u>

The Bush Administration PAGs presented a table of concentrations for specific radionuclides that it proposed would be allowed without requiring treatment or alternative water sources. These concentrations were grossly higher than the levels permitted under the SDWA. The furor they provoked contributed to the Obama Administration withdrawing the proposal.

However, rather than rejecting the Bush Administration approach, the new PAGs issued by EPA adopt a similar tack—proposing abandoning the SDWA requirements and replacing them with considerably higher values. But unlike the Bush PAGs, which expressly included a table of the extreme concentrations proposed for each radionuclide, the new PAGs bury the proposed alternatives in footnotes. (Footnotes 24-27 on p. 42). The actual values for the alternatives are not even included, only citations to other works. No comparison is provided whatsoever as to how much each of these proposed alternatives would weaken the protections in the SDWA.

We have thus undertaken that missing analysis. The results are striking and are summarized in the tables below. The first shows, for four key radionuclides, the EPA Safe Drinking Water Act limits (in becquerels per liter, bq/L) compared with the alternatives now proposed by EPA in the new PAGS, as well the values previously proposed by the Bush Administration. One sees the extraordinary weakening of protections EPA now proposes.

Obama Drinking Water PAG proposals vs. Existing EPA Safe Drinking Water Levels and Bush Administration PAG Proposal
units = Bq/L

Radionuclide	EPA Safe Drinking Water Act Maximum Contaminant Limit (MCL)	Bush Proposed Drinking Water PAG	Obama Proposed Drinking Water PAG Alternative I (EPA 2013 fn 26)	Obama Proposed Drinking Water PAG Alternative II (EPA 2013 PAG fn 25)	Obama Proposed Drinking Water PAG Alternative III (EPA 2013 PAG fn 27)	Obama Proposed Drinking Water Alternative IV (EPA 2013 PAG fn 24a)	Obama Proposed Drinking Water Alternative V (EPA 2013 PAG fn 24b)
Iodine-131	0.111	314	314	3000	170	10	300
Strontium-90	0.296	246	246	200	160	10	
Cesium-137	7.4	503	503	2000	1200	10	
Plutonium-239	0.555	27	27	50	2	1	

The second table shows how many times more radioactivity would be permitted in drinking water under the various alternatives compared to the SDWA limits. The extraordinary degree to which EPA proposes increasing permissible concentrations of radionuclides in drinking water is also shown in graphs attached to this letter.

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Factors by Which Obama Drinking Water PAG Proposals Would Exceed Existing EPA Safe Drinking Water Levels

Radionuclide	Bush Proposed Drinking Water PAG	Obama Proposed Drinking Water PAG Alternative I (EPA 2013 fn 26)	Obama Proposed Drinking Water PAG Alternative II (EPA 2013 PAG fn 25)	Obama Proposed Drinking Water PAG Alternative III (EPA 2013 PAG fn 27)	Obama Proposed Drinking Water PAG Alternative IV (EPA 2013 PAG fn 24a)	Obama Proposed Drinking Water PAG Alternative V (EPA 2013 PAG fn 24b)
Iodine-131	2829	2829	27027	1532	90	2703
Strontium-90	828	828	676	541	34	
Cesium-137	68	68	270	162	1.35	
Plutonium-239	49	49	90	3.6	1.8	

It makes no sense to require people to drink water with, for example, more than 800 times the concentration of strontium-90 than the levels EPA has historically permitted, or thousands or even tens of thousands of times the permissible iodine-131 levels.[9] We oppose any weakening of drinking water standards for radioactivity. The SDWA limits should be complied with.

We note that the water PAGs are not designed for the immediate, early phase after a release, when actions to protect water supplies might arguably be difficult. Instead, the water PAGs are for the intermediate phase, after the emergency has passed, and are to be in place for one to several years after the emergency. Surely the position of EPA should be that drinking water for such a long period should be protected at levels EPA has deemed acceptable under the Safe Drinking Water Act.

Rather than proposing to force people to drink water contaminated at levels hundreds, thousands, or even tens of thousands of times higher than the EPA has historically considered acceptable under the Safe Drinking Water Act, the PAGs should instead do what they are supposed to do: provide protective action guidance for authorities on how to treat contaminated water or provide alternative drinking water supplies after the immediate emergency has passed. This is, of course, what EPA has historically done in the wake of other emergencies—arranged for treatment or alternative water supplies.

We recommend EPA abandon all efforts to set water PAGs that are weaker than the Safe Drinking Water Act limits, and instead, provide real, concrete guidance to authorities on how to safeguard water supplies so as to protect the public.

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[9] EPA has tried to defend these proposals to dramatically increase allowable radioactivity concentrations in drinking water by asserting that the SDWA limits are "based" on a 70-year lifetime exposure. That is not really true. Under SDWA, drinking water is not to contain radionuclides at concentrations above the Maximum Contaminant Limit (MCL) averaged *over a year*. (Even were that not the case, most of the new values proposed are not seventy times higher than MCLs, but hundreds or thousands of times higher). Similarly, the claim that it is appropriate to allow far higher levels of a radionuclide like I -131 because it is relatively short -lived is misdirected. Under SDWA, as indicated above, one already can average the concentration over a year. There is no need to breach the SDWA.

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2. The PAGs Propose Dramatically Relaxing EPA's Long-Term Cleanup Requirements

EPA has historically required even the nation's most contaminated sites to be cleaned up to a level deemed protective, defined as within EPA's long-held acceptable risk range, which aims for a risk level of one in a million (10^{-6} risk) but allowing no more than one in 10,000 people exposed to get cancer (a 10^{-4} risk) from that exposure. EPA has thus established Preliminary Remediation Goals (PRGs) for both radionuclides[10] and hazardous chemicals[11] and a flexible process by which, if unusual circumstances make reaching the PRGs difficult, less protective standards can be adopted so long as they are within the risk range. These risk levels have been accepted as reasonable for even huge, heavily contaminated Superfund sites (e.g. Hanford) that are half the size of a state, and thus should not be relaxed in the PAGs. The main reason for the reduction in protection is to save money and liability for industries and agencies that carry out practices that could result in large radioactive contamination, mainly the nuclear power industry and the atomic weapons fuel chain agencies and their contractors.

EPA now proposes in the PAGs that this long-followed protective approach and acceptable risk range be jettisoned and that extraordinarily higher concentrations of radionuclides be allowed to remain in soil for the long-term with no effort at cleanup. While not using the controversial term "optimization" from the Bush-era proposed PAGs, language in the PAGs could permit some to say that EPA now merely proposes optimization without calling it that. No risk-based cleanup standards for long-term cleanup would be established in the PAGs, even as a baseline, but rather a vague, undeveloped, makeshift process would be followed whereby cleanup standards would be established after the fact, based on factors other than public health. For example, the PAGs contemplate letting the desire of industry or federal agencies to not have to pay for cleaning up contamination they have created by a release override the public's need to be protected. This is unacceptable.

Just as EPA tried to relegate the proposed weakening of drinking water standards to footnotes, EPA also appears to be trying to weaken long-term cleanup standards by vague references to the DHS 2008 PAGs and by cooperating with an outside group with strong nuclear ties, the National Council on Radiation Protection and Measurements (NCRP) which recommends grossly weakened cleanup guidelines via an NCRP guidance document.

Especially troubling is the process by which EPA chose to pursue the path of weakening long-term protection of the public. For example, two EPA staffers from relevant EPA Offices[12]

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[10] http://epa-prgs.ornl.gov/radionuclides/

[11] http://www.epa.gov/reg3hwmd/risk/human/rb -concentration_table/index.htm
These regional values are used nationally.

[12] John Edwards, head of the radiation protection division of the Office of Radiation and Indoor Air, and John Cardarelli from the Office of Emergency Management. EPA claims they participated with NC RP on their own but has not provided evidence that they took time off and that the activity was not approved by their superiors at EPA.

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influential in developing the EPA PAGs participated in writing the NCRP guidance document which presses EPA to weaken, to an extraordinary degree, its long-term cleanup standards. This is significant because EPA staff from other Offices attempting to retain existing radiation protection levels were not included on the NCRP team. This internal EPA conflict and the apparent conflict of interest in EPA staff participating at all in the private NCRP effort at pushing EPA to relax its cleanup goals, while representing only one side of the internal EPA debate, has been reported on in the media, pursued via Freedom of Information Act requests and a letter from Public Employees for Environmental Accountability to then-EPA Administrator Jackson[13] but EPA has failed to respond meaningfully.

The EPA PAGs DO NOT incorporate the full DHS PAGs on long-term cleanup, only a subsection dealing with general process matters about consultation (reprinted in section 4.1.6 of the EPA PAGs, pp. 55-59). The DHS PAGs sections on "optimization" and use of benchmarks for long-term cleanup are *not* included in the EPA PAGs. However, a single sentence elsewhere in the EPA PAGs (p. 4, para 4), mentions incorporation of guidance from DHS PAGs' long-term cleanup section, presumably referring to the subsection that is inserted. This poorly crafted sentence, if not clarified, can create subsequent confusion as to whether EPA is incorporating all of the DHS PAGs on long-term cleanup or only the generally innocuous section that is in fact incorporated directly. Since the DHS PAGs are explicitly based on "optimization," and the EPA PAGs are not, and since the DHS PAGs reference "benchmarks" from nuclear advocacy groups like ICRP, NCRP, and IAEA, which have pushed for "acceptable" long-term doses as high as 10 rem per year, with consequent cancer risks as high as 1 cancer per 2 people exposed, whereas the EPA PAGs do not, this potential confusion must be eliminated.

EPA should remove any implication from its PAGs that it is incorporating the DHS PAGs' "optimization" plan and contemplated use of "benchmarks." We recommend that the sentence on p. 4 be rewritten to state, "This EPA Manual substantively incorporates in Section 4.1.6 (pp.55-59) a specific subsection of the late phase cleanup guidance provided in the 2008 DHS document and refers readers to additional planning resources."

The NCRP report--which claims it is designed to provide guidance for both the DHS and EPA PAGs--recommends long-term cleanup standards of 100 to 2000 millirem per year (0.1 to 2 rem per year). That is the equivalent of 50 to 1000 chest X-rays annually, or one a week to three a day every day of one's life for decades. By EPA's own cancer risk estimates, 2 rem per year over a lifetime would result in an excess cancer in one in every six people exposed. Because of the increased risk in earlier years, EPA estimates that even just thirty years exposure from birth would result in a cancer in one in eight people exposed.[14] These risk levels are orders of magnitude higher than EPA's long-accepted risk range.

Additionally, NCRP proposes specific levels of radionuclides that should be allowed to remain in soil and not cleaned up, with people exposed for decades to that radiation without protective actions having been undertaken. Those levels are extraordinarily higher than EPA's

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[13] http://www.nti.org/gsn/article/epa -withholds-information-dirty-bomb-report-amid-cancer-concerns/; http://www.peer.org/assets/docs/epa/ 4_5_10_PEER_Radiation_ltr_to_EPA.pdf

[14] See footnote 3 above.

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Preliminary Remediation Goals (PRGs), or even the upper limit of EPA's acceptable residual contamination (one hundred times the PRG). We have attached tables and figures showing the extreme exposures these proposals would produce compared to anything EPA has ever said in the past was acceptable. For some radionuclides, the NCRP proposed "acceptable" contamination levels would be hundreds of thousands or even millions of times higher than what EPA's remediation goals are at the nation's most contaminated sites, for the same exposure scenario.

We thus oppose the long-term cleanup section of the EPA PAG as written, and any potential linkage of the EPA PAG to DHS' PAGs' "optimization" process and/or to the NCRP recommendations or those of other bodies that push for increased radiation exposures of the public.[15] EPA should stick to its longstanding principles and require cleanup to its standards for the most contaminated sites in the country, CERCLA. In extraordinary circumstances, there are already provisions whereby one can make an exception if one absolutely has to, but even then one still aims to get as close to the CERCLA risk range as possible. The PAGs as written, however, suggest a concerted attack by proponents of weakening public protections, and this should not be allowed.

3. The Elimination of Relocation PAGs for High Thyroid and Skin Doses and for High Projected Cumulative Whole Body Doses

EPA's 1992 PAGs, which the current document revises, require relocation if thyroid or skin doses over certain specified limits are predicted. Again, it is important to remember that PAGs are doses that are to be *avoided* by protective actions. The new PAGs eliminate both requirements. We believe that is inadvisable.

EPA claims it is removing the skin and thyroid relocation PAGs to "avoid confusion." This makes no sense. If predicted doses to the skin or thyroid are likely to be very large, one needs to be protecting people by getting them out of harm's way. The fact that some people in some situations may have access to potassium iodide (KI) doesn't obviate the need to relocate those who don't. And KI does nothing to protect against skin cancer; its sole use is aimed at the thyroid.

Additionally, the longstanding PAGs require protective action to assure people do not get exposed to more than 5 rem over 50 years. This has been jettisoned as well. Obviously, if some within EPA are pushing to allow long-term doses as high as 2 rem per year over many decades (60 rem over 30 years, 140 rem over a lifetime), a 5 rem cumulative cap would prevent that. That apparently is behind their desire to eliminate the lifetime cap. The cap should remain and in fact be tightened considerably (see discussion in section 6 below).

[15] We incorporate herein by reference comments submitted on the NCRP recommendations, found at http://committeetobridgethegap.org/wp -content/uploads/2013/04/ncrp -short-comments-from-multiple-groups.pdf and http://committeetobrid gethegap.org/wp-content/uploads/2013/04/CBGNIRSPSRSCFS -updated.pdf

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4. The Recommendation to Permit Radioactive Waste to Be Disposed of In Unlicensed Disposal Sites, Including Regular Municipal Garbage Dumps

Nuclear advocates have long pushed to deregulate significant portions of the radioactive waste stream and permit such wastes to be disposed of in sites neither licensed nor designed for radioactive materials, including municipal garbage dumps. This has largely been driven by a desire to cut safety corners so as to save money for industry and government.

The PAGs strongly push for elimination of the existing requirements that radioactive waste go to sites licensed and designed for radioactive waste. We oppose such an effort. Again, EPA seems intent on weakening protections. PAGs are supposed to be guides for *protective action*, not an effort to eliminate protections.

The section on waste disposal issues in Chapter 4 of the PAGs, *Guidance for the Late Phase,* appears to have been written with little or no historical knowledge about the widespread public opposition over past decades in the United States to proposals for deregulation, free release, clearance or below-regulatory-concern (BRC) designation of radioactive waste from both nuclear power and weapons facilities. The suggestion to allow nuclear waste into RCRA C and D Hazardous and Solid waste facilities is both cavalier and dangerous. Allowing the waste to go into and contaminate or poison commercial recycling has also been soundly rejected. We oppose sending nuclear waste to facilities that are not specifically licensed for radioactive materials, including but not limited to solid and hazardous landfills, incinerators, processors and recycling facilities.

Some of the reasons to keep nuclear waste out of facilities not specifically licensed for radioactive materials include inevitable leakage, the potential intermixing of radioactive materials with chelating and organic complexing agents that greatly enhance the migration of the radioactivity into groundwater and surface water, risk of fire in a landfill with both radioactive and regular wastes as is currently occurring at the West Lake landfill in Missouri, failure to consider the ability of RCRA facilities to isolate the wastes they are licensed to dispose, shorter institutional control periods, failure to inform and protect workers, and lack of detailed radiation monitoring of air, soil, and water. Recycling radioactively contaminated materials into the consumer metal supply rather than disposing of them in licensed radioactive sites is not acceptable.

EPA should have reviewed the public comments which clearly rejected their previous efforts[16] in the mid 1990's, 2001 and 2003 to allow nuclear waste into solid and hazardous facilities and into recycling to make consumer goods.

EPA gives lip-service to inclusivity in the PAGs, ignoring the reality that deregulating (or never requiring radioactive regulation) of nuclear waste from incidents and releases will

[16] 1996-1998 EPA consideration, publication and rejection of rules to legalize contaminating metal recycling with radioactive metal; 2001 66 Fed Reg 27218 May 16, 2001 to allow mixed waste to go to nuclear waste sites; 2003 ANPR 65120 68 Fed Reg 222, Nov 18, 2003 to consider "non -regulatory approaches" for radioactive waste management.

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disproportionately impact people of color and low income communities which is where the solid and hazardous waste facilities frequently are located and where new ones tend to get sited.

We encourage EPA, the other federal agencies and states to focus their efforts on *preventing* nuclear power incidents rather than pushing to relax cleanup and disposal safety requirements.

5. The Inappropriate Expansion of the PAGs to Cover Essentially All Radioactive Releases, from The Most Extraordinary (e.g. Nuclear Weapons Explosions) to Those Far Less Consequential (e.g. Small Transportation Accidents)

The DHS PAGs mixed the absolutely extraordinary event—detonation by a terrorist of a nuclear weapon in the U.S.—with vastly less consequential events involving "dirty bombs" of a range of sizes, including very small ones. It was inappropriate to suggest the same standards for such varying incidents. If a nuclear bomb explodes, all bets are off. If a small dirty bomb is detonated, normal response procedures and cleanup requirements can take care of it. By mixing the huge and the small and requiring the same lax standards, a disservice is being done.

EPA has now greatly compounded that problem by expanding its PAGs from dealing with a catastrophic release from a nuclear power plant meltdown to covering all radioactive releases, including such events as transportation accidents and incidents at radiopharmaceutical facilities.[17] Indeed, under the PAGs definition of its scope—dealing with any radioactive release for which a protective action may be required—it is hard to see what might not be covered or how CERCLA, which is EPA's longstanding statutory program for dealing with such releases would still exist, despite *pro forma* language in the PAG to the contrary.

By creating a single set of standards to address both a Fukushima-type event and a truck carrying a shipment of medical isotopes that goes off the road, one creates a useless PAG and the prospect of greatly relaxed cleanup and protection standards for many events for which there is no question that current standards and response approaches under CERCLA are fully adequate. We oppose this effort to expand the PAGs to essentially encompass every radioactive release.

6. Relying on PAG Dose Limits As High As Or Higher Than Those In Effect Decades Ago Despite the Fact That Official Estimates of Cancer Risks from Radiation Have Increased Significantly Over That Period

In addition to eliminating some important dose triggers for protective action in the older PAGs, EPA carries forward old limits that have been in place for decades, despite EPA's own official estimates of radiation risk per unit dose having markedly increased during that time. The updated official consensus is that radiation is considerably more harmful than was known when the earlier levels were established. EPA fails to improve protection based on the newer, higher

[17] EPA PAG Manual 2013, page 4 section 1.3.4 "This updated Manual applies PAGs and protective actions to an expanded range of sources of potential radiological releases, include commercial nuclear power facilities, uranium fuel cycle facilities, nuclear weapons facilities, transportation accidents, radiopharmaceutical manufacturer and users, space vehicle launch and reentry, RDDs and INDs."

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risk, and in fact allows for reduced protection instead. For example, the 1992 PAG values incorporated into the newest PAG are based on the National Academy of Sciences' BEIR III study (and in fact, go even far further back than that). But BEIR V increased those risk estimates three- or four-fold, and BEIR VII increase those an additional 35%. EPA has adopted those values in its most recent Blue Book. So, despite officially acknowledging that radiation is four or five times more dangerous than assumed when the 1992 PAGs were established, EPA now merely uses the same dose limits without any effort to tighten them by a factor of four or five.

We recommend that all parts of the PAGs that weaken or eliminate existing protections be abandoned, and all dose limits be tightened by at least the increased risk EPA now acknowledges for radiation.

7. The PAGs Incorporate Archaic and Extremely High FDA Food Contamination Guidelines, Apparently Without Updated Review

EPA simply by reference incorporates old FDA guidelines for food contamination. These food radiation exposures would be on top of doses from other exposures (e.g., inhalation, groundshine) adding significantly to cumulative doses to the public. The old FDA guidelines are based on even older guidance, and none of the dose limits have been reduced over time to reflect the increased official risk estimates discussed above.

The old FDA guidance allows—from the food pathway alone—500 millirems exposure per year. This means that the food one eats each day would produce a radiation dose equivalent of a chest X-ray every day. The FDA food guidance limits appear to have no time limit; food contaminated at these levels would be permitted to be consumed over a lifetime. At these dose levels, EPA's risk estimates indicate a lifetime risk of 4×10^{-2}, or every 25th person eating food contaminated at those levels getting a cancer from it. This is simply unacceptable, and EPA should reject any such proposed guidance. At minimum, if EPA really intends to accept such doses, it should be candid with the public and say that those "acceptable" levels, by its own estimate, would produce an excess cancer in 4% of the public. We think that would be a hard sell ethically, and EPA should thus rethink adoption of such extraordinarily lax protection levels.

SUMMARY OF RECOMMENDATIONS

We recommend the April 2013 draft PAGs be withdrawn.

We oppose any weakening of drinking water standards for radioactivity. The Safe Drinking Water Act limits should be complied with. The PAGs should do what they are supposed to do: provide protective action guidance for authorities on how to treat contaminated water or provide alternative drinking water supplies over the one to several years after the immediate emergency has passed. This is, of course, what EPA has historically done in the wake of other emergencies—arranged for treatment or alternative water supplies.

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We recommend EPA abandon all efforts to set water PAGs that are weaker than the Safe Drinking Water Act limits, and instead, provide real, concrete guidance to authorities on how to safeguard water supplies so as to protect the public to those levels or better.

The PAGs contemplate letting the desire of nuclear industry and federal agencies to not have to pay for cleaning up contamination they have created by radioactive releases override the public's need to be protected. This is unacceptable.

EPA should remove any implication from its PAGs that it is incorporating into responding to non-terrorist radiological events the Department of Homeland Security PAGs' "optimization" plan and contemplated use of "benchmarks" that would be outside EPA's historical acceptable risk range.

We oppose the long-term cleanup section of the EPA PAG as written, and the potential linkage of the EPA PAG to DHS' PAGs' "optimization" process, and to the NCRP recommendations or those of other bodies that push for increased radiation exposures of the public. EPA should stick to its longstanding principles and require cleanup to its standards for the most contaminated sites in the country, CERCLA. The PAGs as written suggest a concerted attack by proponents of weakening public protections, and this should not be allowed.

Do not remove, but instead retain and strengthen, relocation PAGs for thyroid and skin doses.

Do not remove, in fact EPA should strengthen, the longstanding PAGs that require protective action to assure people do not get exposed to more than 5 rem over 50 years.

The outdated FDA food contamination guidelines should be replaced with markedly lower permissible concentrations of radioactivity in food.

We oppose sending nuclear waste to facilities that are not specifically licensed for radioactive materials including but not limited to solid and hazardous landfills, incinerators, processors and recycling facilities. We encourage EPA, the other federal agencies and states to focus on *preventing* nuclear power incidents rather than weakening protection of the public in case of such releases.

We oppose the effort to expand the PAGs to essentially encompass every radioactive release.

We recommend that all parts of the PAGs that weaken or eliminate existing protections be abandoned, and all dose limits be tightened by at least the increased risk EPA now acknowledges for radiation.

Conclusion

Protective Action Guides are supposed to provide guidance for actions to protect the public from radiation. The current PAGs do the opposite—recommend grossly increased risks to the public without protection. We urge that the PAGs be withdrawn.

Sincerely,

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Erwin Citizens Awareness Network, Inc.
Erwin, TN

Barbara Warren
Citizens' Environmental Coalition
Albany, NY

Br. Senji Kanaeda and Br. Gilberto Perez
Nipponzan Myohoji Dojo
Bainbridge Island, Washington

Sharon E. Lewis, Executive Director
Connecticut Coalition for Environmental Justice
Hartford, CT

Charles K. Johnson, Director
Physicians for Social Responsibility
Task Force on Nuclear Power
Oregon and Washington

Kelly Campbell
Oregon **Physicians for Social Responsibility**
Portland, Oregon

Kaye Kiker
Citizens Task Force
Mentone, Alabama

Judy Braiman
Empire State Consumer Project
Rochester, New York

Lilias Jarding
Clean Water Alliance
Rapid City, South Dakota

Lisa A. Coons
Center for Earth Spirituality and Rural Ministry Mankato, MN

Craig Fiels
Sustainable Economic Solutions
Oakland, CA

Chris Borello
Concerned Citizens of Lake Township Uniontown IEL Superfund Site
Ohio

Diane Swords
Peace Action CNY
Syracuse, NY

Dr. Kelly Sutton
Raphael Medicine & Therapies PC
Fair Oaks CA

Cara L. Campbell Ecology Party
Ecology Party of Florida
Ft. Lauderdale, FL

Aletha
Free Soil Party USA
Los Angeles, California

Elaine Holder
San Luis Obispo Mothers for Peace
San Luis Obispo, CA

Garry Morgan, Elizabeth Johnson
Bellefonte Efficiency and Sustainability Team BEST/Mothers Against Tennessee River Radiation MATRR
Alabama, Tennessee

Ernest Fuller
Concerned Citizens for SNEC Safety
Six Mile Run, PA

Gene Stone
Residents Organized For a Safe Environment (ROSE)
California

Margaret Sheehan
Project for Energy Accountability
Cambridge, MA

Greg Mello
Los Alamos Study Group
Albuquerque, NM

Gwen Dubois
Chesapeake Physicians for Social Responsibility
Maryland

Dagmar Fabian
Crabshell Alliance
Maryland

Cheryl Johncox
Buckeye Forest Council
Columbus Ohio

Heather Cantino
Athens County Fracking Action Network
Athens, Ohio

Joanne Hameister
Coalition on West Valley Nuclear Wastes
East Aurora, NY

Jim Murphy
The Peace Farm
Amarillo, TX

Janet Greenwald
Citizens for Alternatives to Radioactive Dumping
Albuquerque, NM

Jay Sweeney
Green Party of Pennsylvania
Harrisburg, PA

Jim Haber
Nevada Desert Experience
Las Vegas, Nevada

Scott Sklar
The Stella Group, Ltd.
Arlington, VA

Michael J. Keegan
Coalition for a Nuclear Free Great Lakes
Monroe, Michigan

Alice Hirt
Don't Waste Michigan
Holland, Michigan

Jessie Collins
Citizens Resistance at Fermi 2
P.O. Box 331
Monroe, Michigan 48161

Nancy Burton
Connecticut Coalition Against Millstone
Mothers Milk Project
Redding CT

Nancy L Casady
Ocean Beach Organic Food Co-op
San Diego, CA

Patricia Birnie
GE Stockholders Alliance
Sandy Spring, MD

Paul Gallimore
Long Branch Environmental Education
Center, Big Sandy Mush Creek
Leicester, NC

Peggy and Melodye Pryor
Andrews, TX

Roger Herried
Abalone Alliance Clearinghouse
San Francisco, CA

Gladys Schmitz, SSND
Mankato Area Environmentalists Board
Mankato, MN

Sharyn Cunningham
Colorado Citizens Against Toxic Waste, Inc.
Canon City, Colorado

Titus North
Citizen Power, Inc.
Pittsburgh, PA

Tribal Scribal
The Enviro Show WXOJ-LP
Florence, MA

Vanessa Pesec
Network for Oil and Gas Accountability
and Protection (NEOGAP)
Concord Township, Ohio

William S. Linnell
Cheaper, Safer Power
Portland, Maine

William Maurer
Cape Downwinders
Falmouth, MA

Liane Casten
Citizens Act to Protect our Water
(CAPOW)
Evanston, IL

Mal Chaddock
NoNukesNW.org
Portland, OR

Robin Schneider
Texas Campaign for the Environment
Austin, TX

Notes

As to the water PAGs, please note that EPA's Alternative 1, identified in footnote 26 of the PAG, is for the same high dose limit that was put forward in the Bush EPA PAG. EPA had previously identified in the Bush PAG radionuclide concentrations it claimed were associated with that dose, so we used here those concentrations. Secondly, Alternative 4, the first alternative in footnote 24 of the PAG, is really not a set of proposed water limits for emergencies but a set of weaker standards for normal consumption of drinking water and not really relevant to the PAG discussion. Lastly, Alternative 5, the second reference in PAG footnote 24, provides a value for only one radionuclide, iodine-131.

The NCRP's suggested long-term cleanup levels are found in NCRP SC 5-1 Draft Report, "Decision Making for Late-Phase Recovery from Nuclear or Radiological Incidents," February 25, 2013, National Council on Radiation Protection and Measurements.

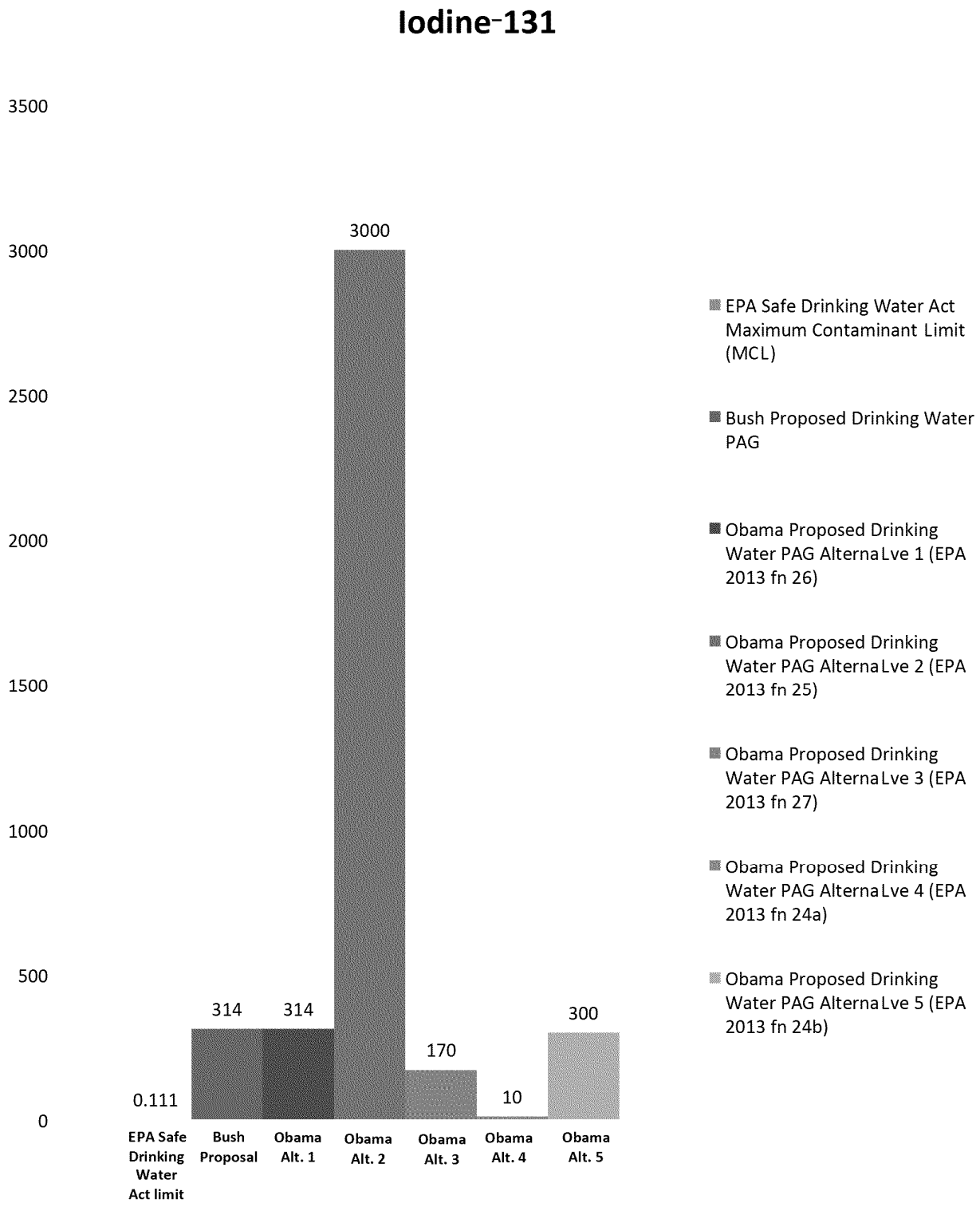
Table 6.4 of the report identifies levels of contamination below which no cleanup would occur based on a 1 mSv/yr dose, for resident farmer, urban resident, and industrial/commercial exposure pathways, and for 95th and 50th confidence intervals. The NCRP report recommends cleanup choices based on a dose range of 1 mSv/yr to 20 mSv/yr (100 mrem to 2000 mrem/yr) and indicates that one just scale up the values in Table 6.4, which are based on 1mSv/yr, to be obtain the concentrations for the 20 mSv/yr limit.

We have taken the NCRP values and compared them to EPA's Preliminary Remediation Goals (PRGs) for the same exposure scenarios—resident farmer and urban resident. We have compared the EPA PRGs to both the 50th and 95th confidence levels concentrations identified by the NCRP report.

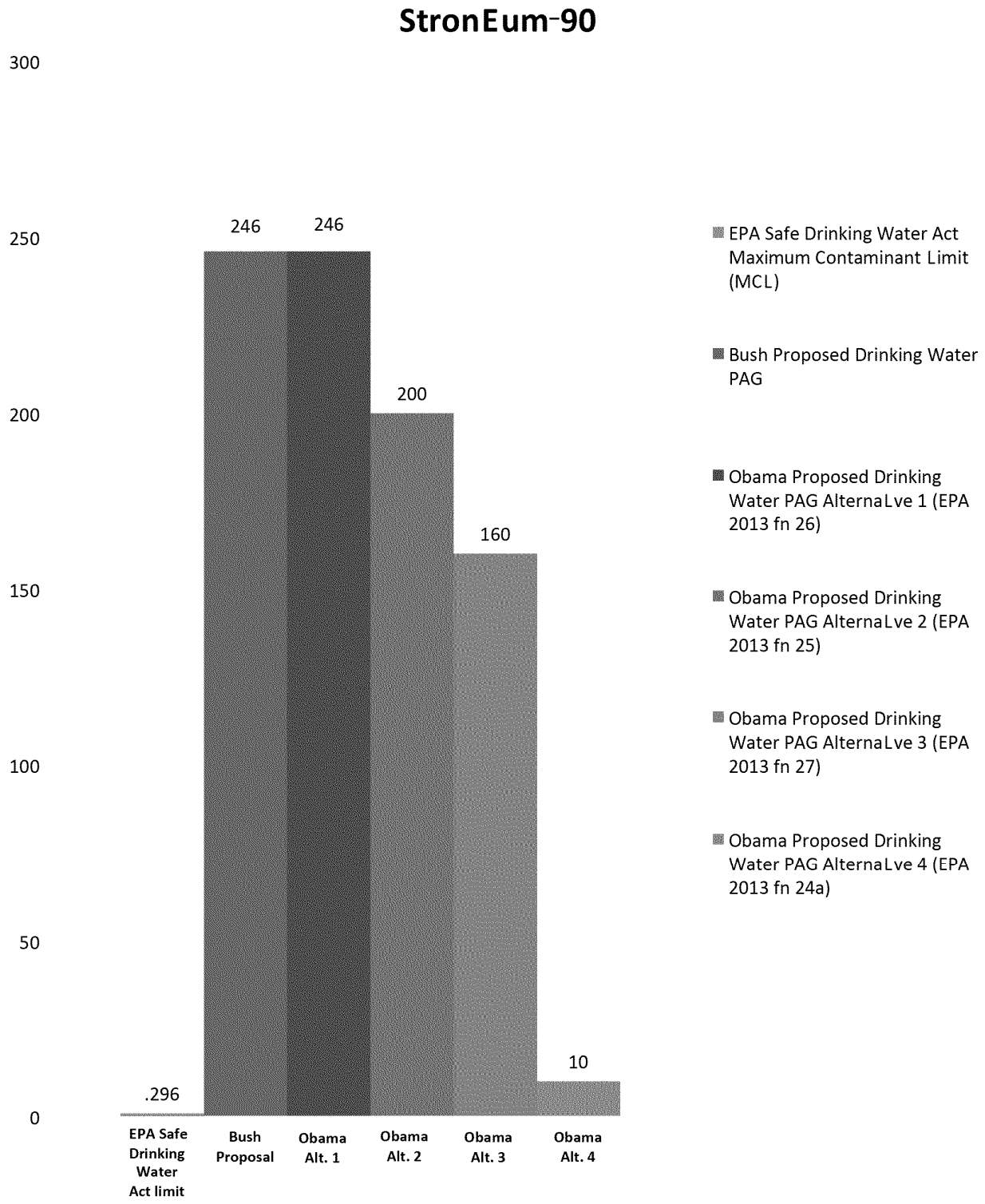
It should be noted that EPA PRGs are the remediation goals, and that in unusual circumstances where one can't meet the goal one can fall back from them, but no more than by two orders of magnitude. In other words, EPA's remediation levels are a range of the PRG to no more than 100 times the PRG. Thus, at the upper end of the NCRP proposed acceptable risk range, for example, for a resident farmer and a 50% confidence interval, NCRP proposed plutonium-239 levels nearly 12 million times higher than EPA's PRG for the same scenario. That would be 120,000 times higher than the upper limit of EPA's risk range.

We gratefully acknowledge the work of Ryan Forster in producing the graphs.

Allowable Radionuclide Concentrations in Water Under the EPA's Safe Drinking Water Act Limits Compared with Alternatives Identified in Proposed Protective Action Guides, in Bq/L

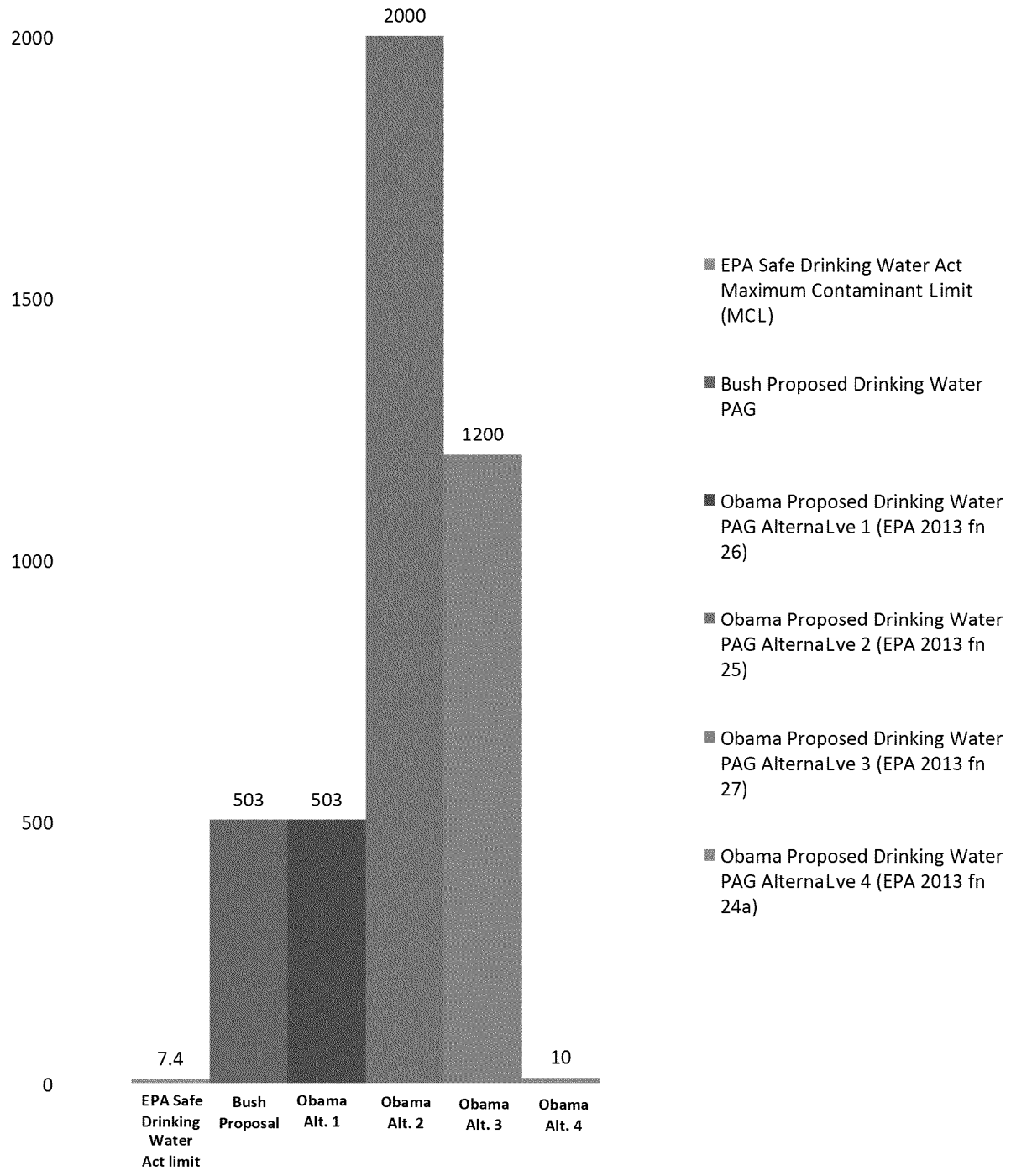


Allowable Radionuclide Concentrations in Water Under the EPA's Safe Drinking Water Act Limits Compared with Alternatives Identified in Proposed Protective Action Guides, in Bq/L



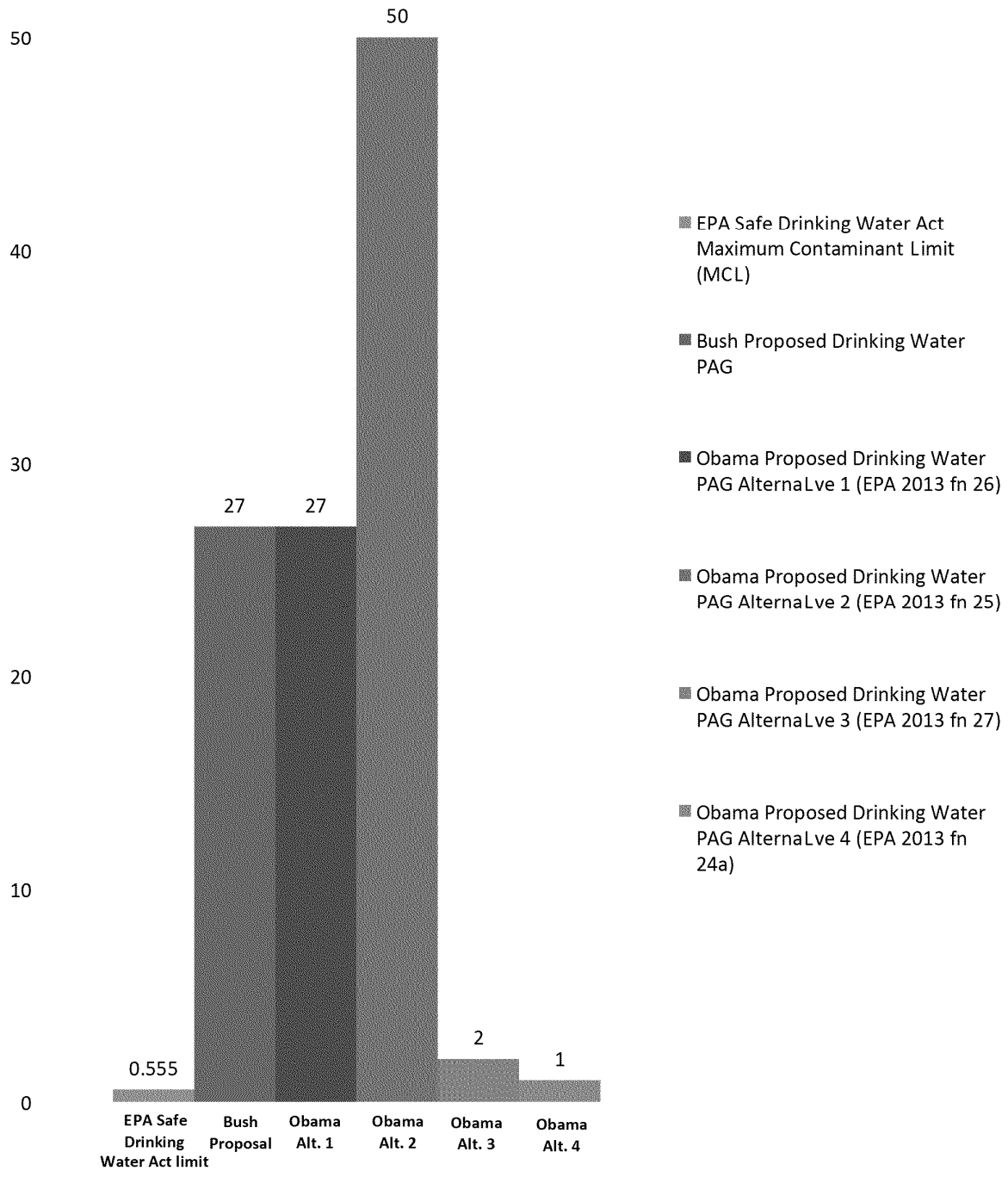
Allowable Radionuclide Concentrations in Water Under the EPA's Safe Drinking Water Act Limits Compared with Alternatives Identified in Proposed Protective Action Guides, in Bq/L

Cesium-137

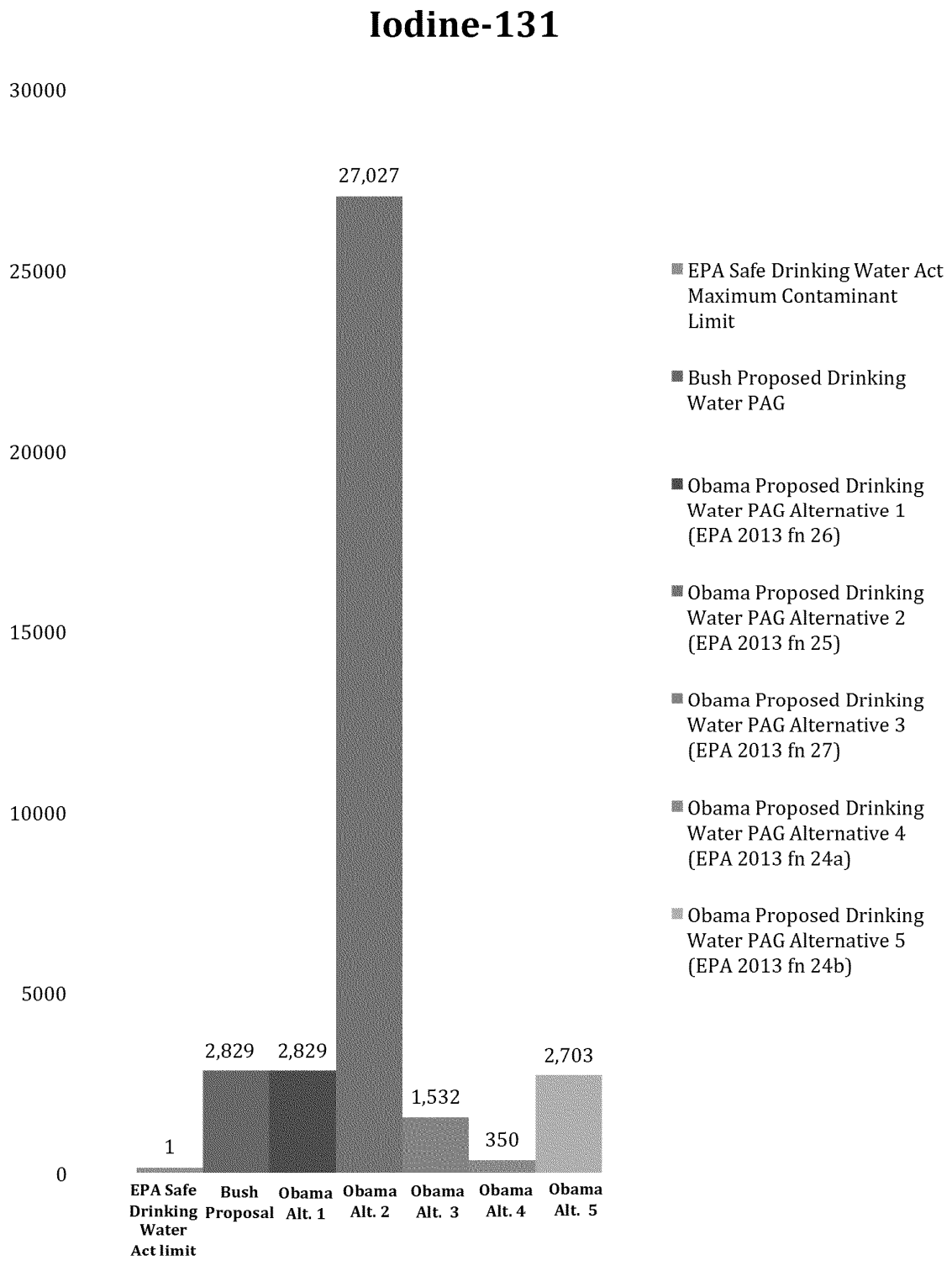


Allowable Radionuclide Concentrations in Water Under the EPA's Safe Drinking Water Act Limits Compared with Alternatives Identified in Proposed Protective Action Guides, in Bq/L

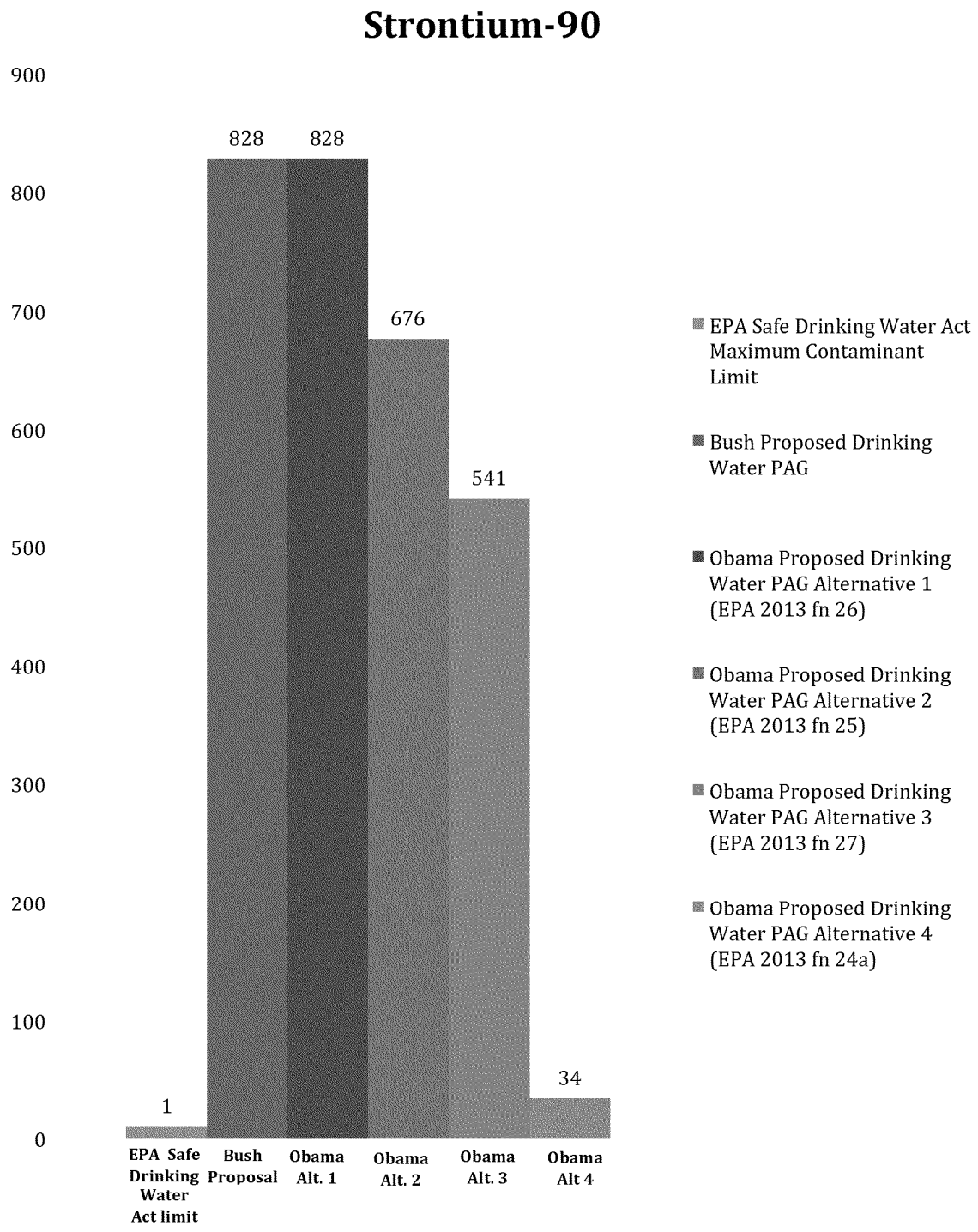
Plutonium-239



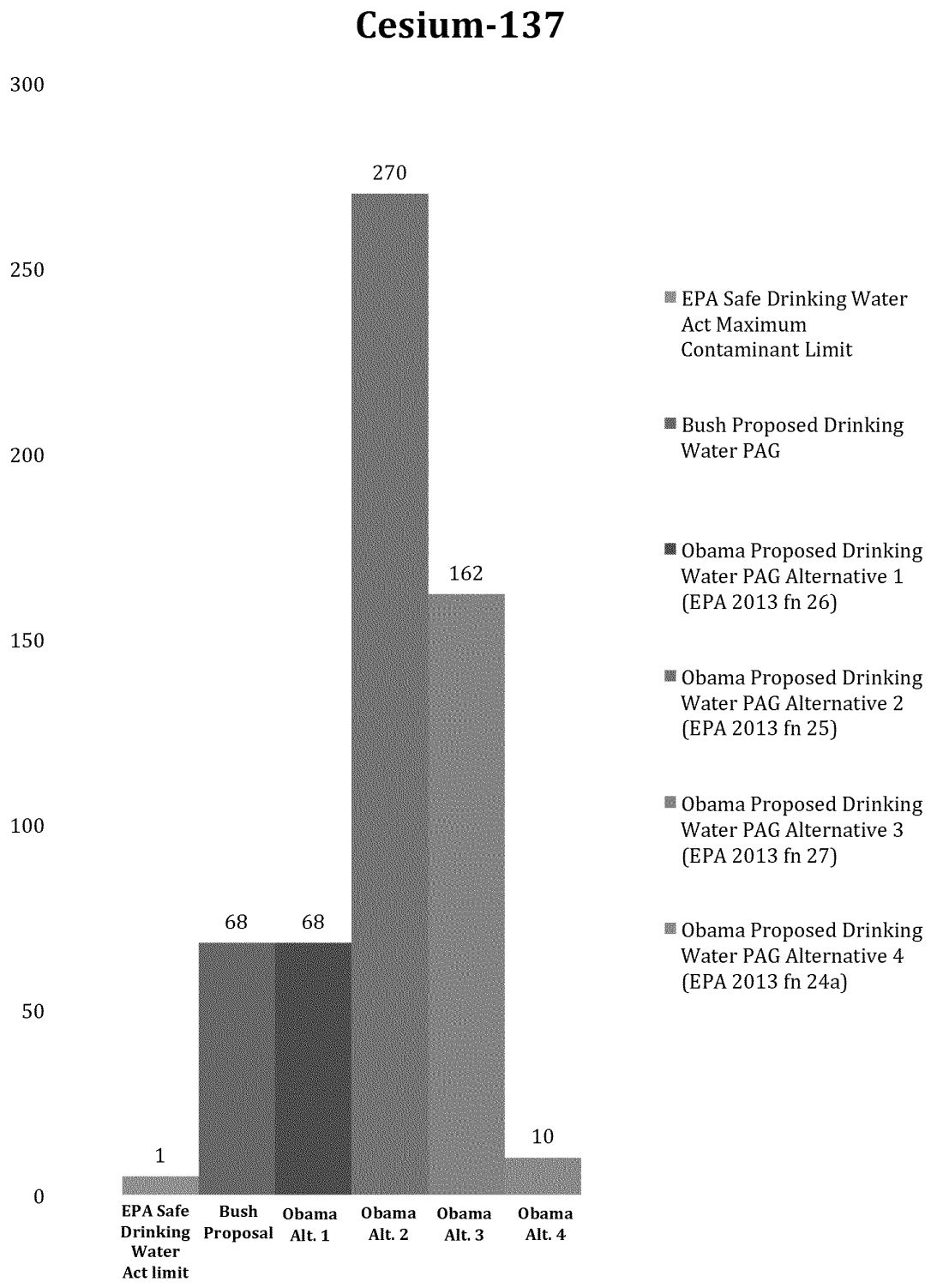
Factors by Which Radionuclide Concentrations in Drinking Water Would Exceed EPA's Safe Drinking Water Act Levels if the Alternatives Identified in 2013 Proposed Protective Actions Guides Were Adopted



Factors by Which Radionuclide Concentrations in Drinking Water Would Exceed EPA's Safe Drinking Water Act Levels if the Alternatives Identified in 2013 Proposed Protective Actions Guides Were Adopted



Factors by Which Radionuclide Concentrations in Drinking Water Would Exceed EPA's Safe Drinking Water Act Levels if the Alternatives Identified in 2013 Proposed Protective Actions Guides Were Adopted



Factors by Which Radionuclide Concentrations in Drinking Water Would Exceed EPA's Safe Drinking Water Act Levels if the Alternatives Identified in 2013 Proposed Protective Actions Guides Were Adopted

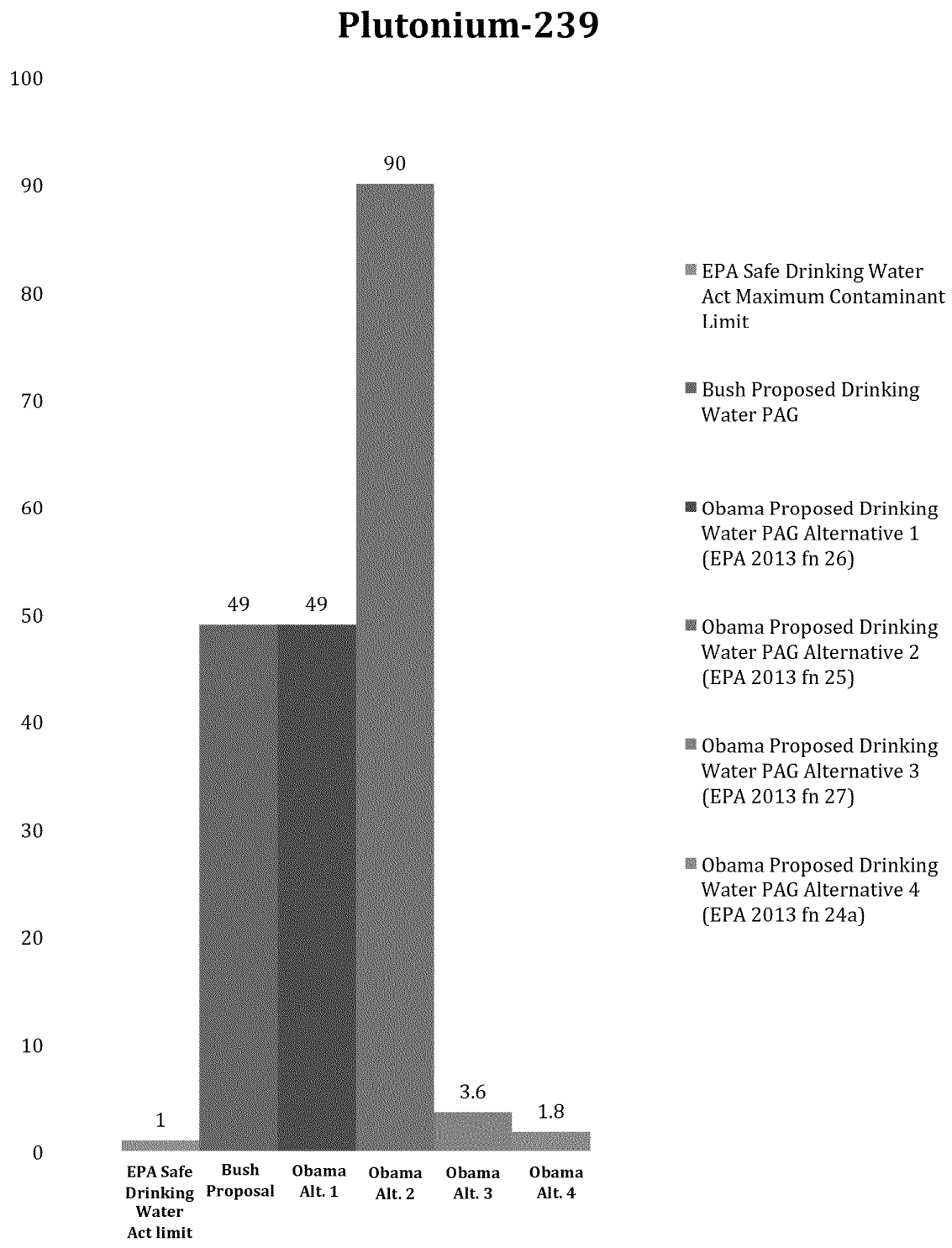


FIGURE 1a

How Many Times More Radioactivity Would be Permitted in Soil for Farmers Under NCRP Proposal Compared to EPA's Remediation Goals

(@ 95% Confidence Level)

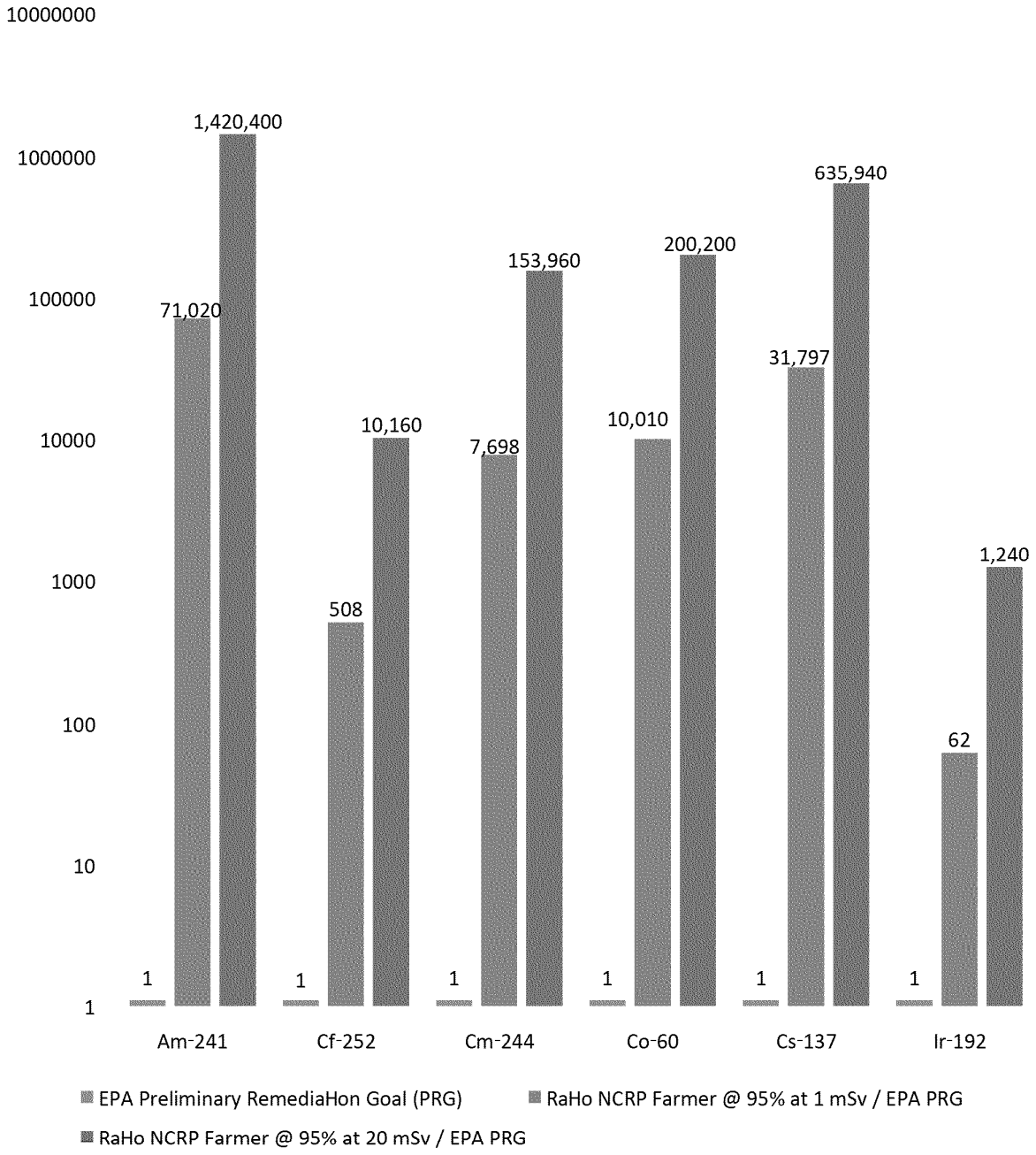


FIGURE 1b

How Many Times More Radioactivity Would be Permitted in Soil for Farmers Under NCRP Proposal Compared to EPA's Remediation Goals

(@ 95% Confidence Level)

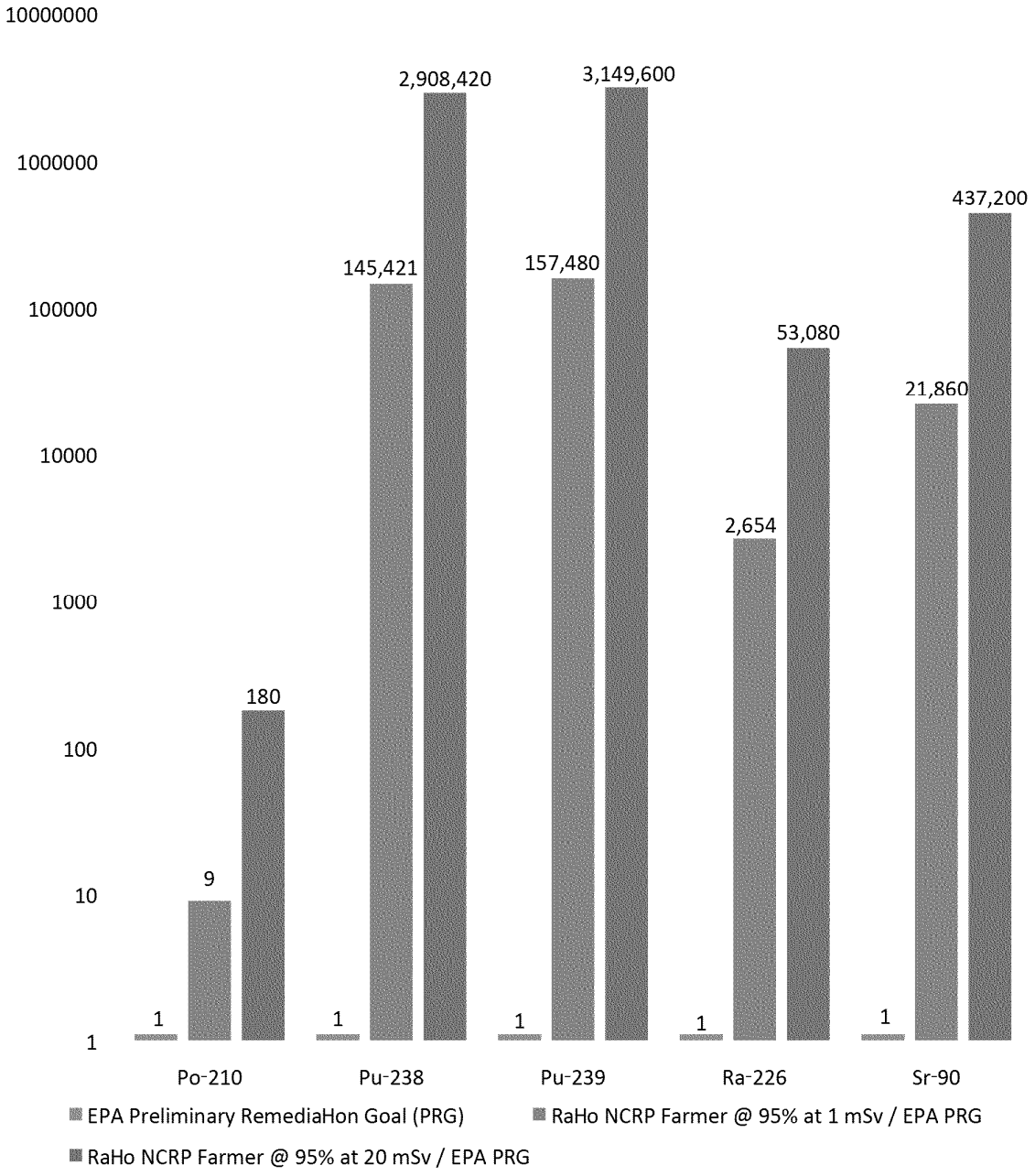


FIGURE 2a

How Many Times More Radioactivity Would be Permitted in Soil for Farmers Under NCRP Proposal Compared to EPA's Remediation Goals

(@ 50% Confidence Level)

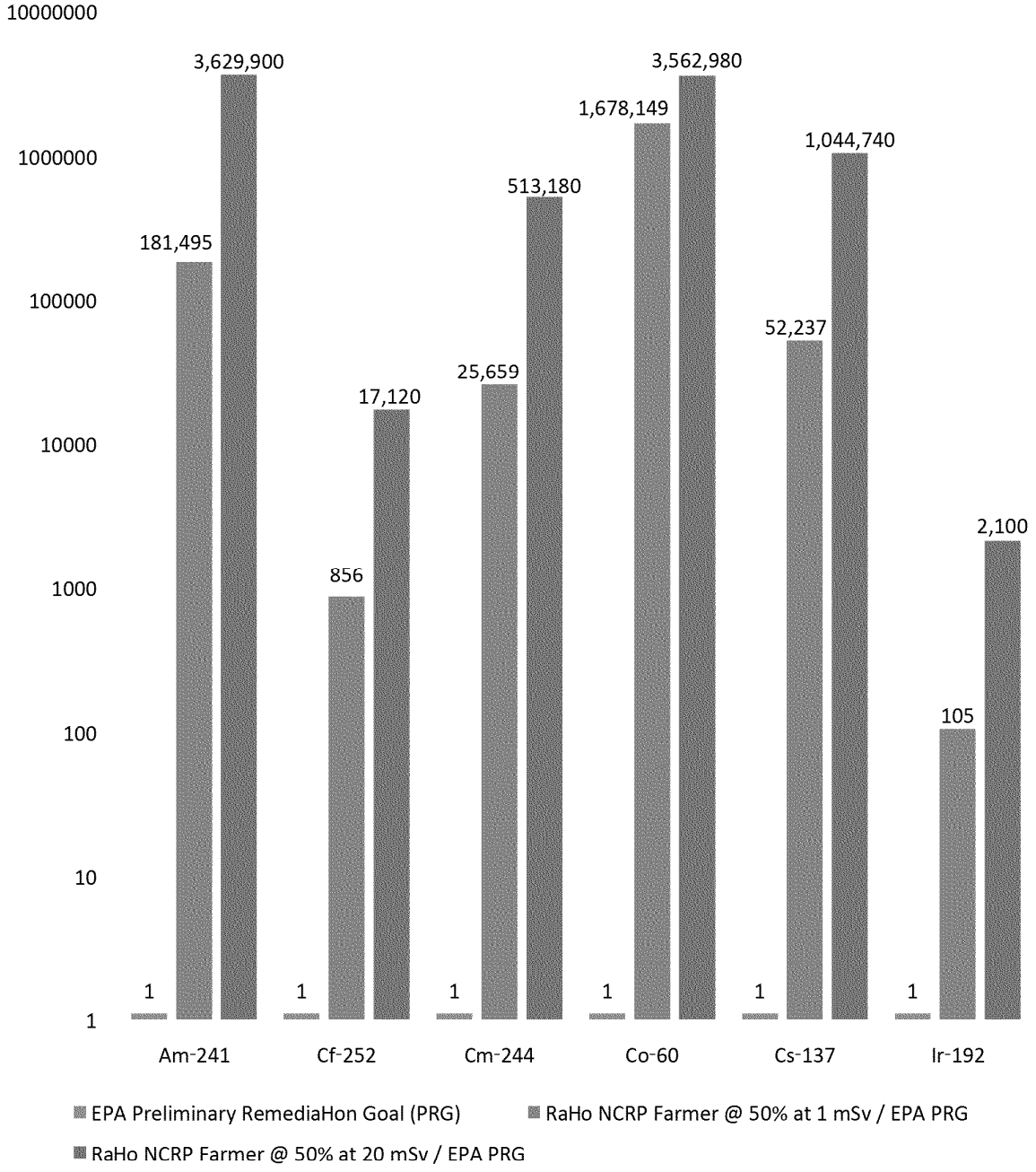


FIGURE 2b

How Many Times More Radioactivity Would be Permitted in Soil for Farmers Under NCRP Proposal Compared to EPA's Remediation Goals

(@ 50% Confidence Level)

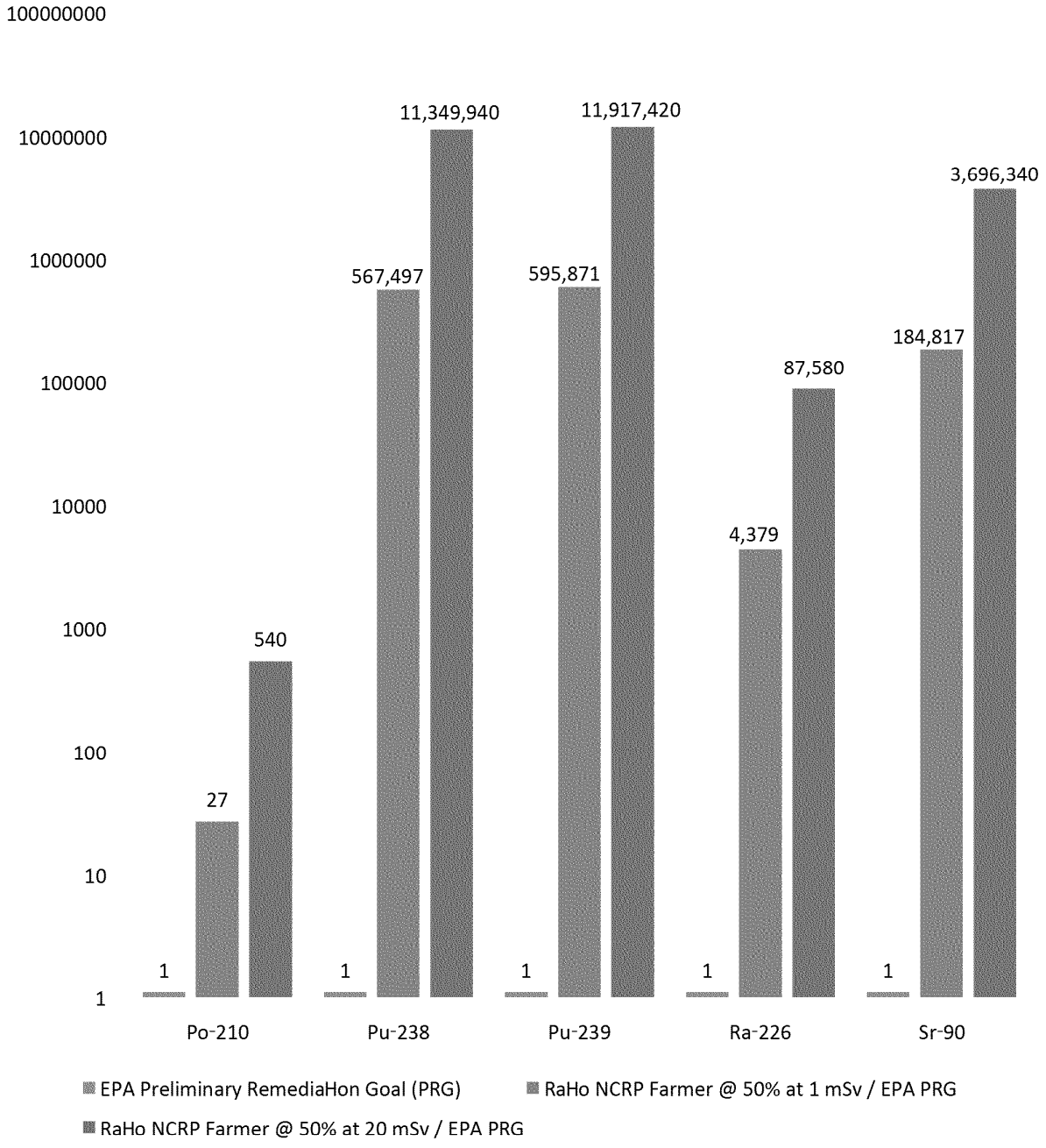


FIGURE 3a

How Many Times More Radioactivity Would be Permitted in Soil for Urban Residents Under NCRP Proposal Compared to EPA's Remediation Goals

(@ 95% Confidence Level)

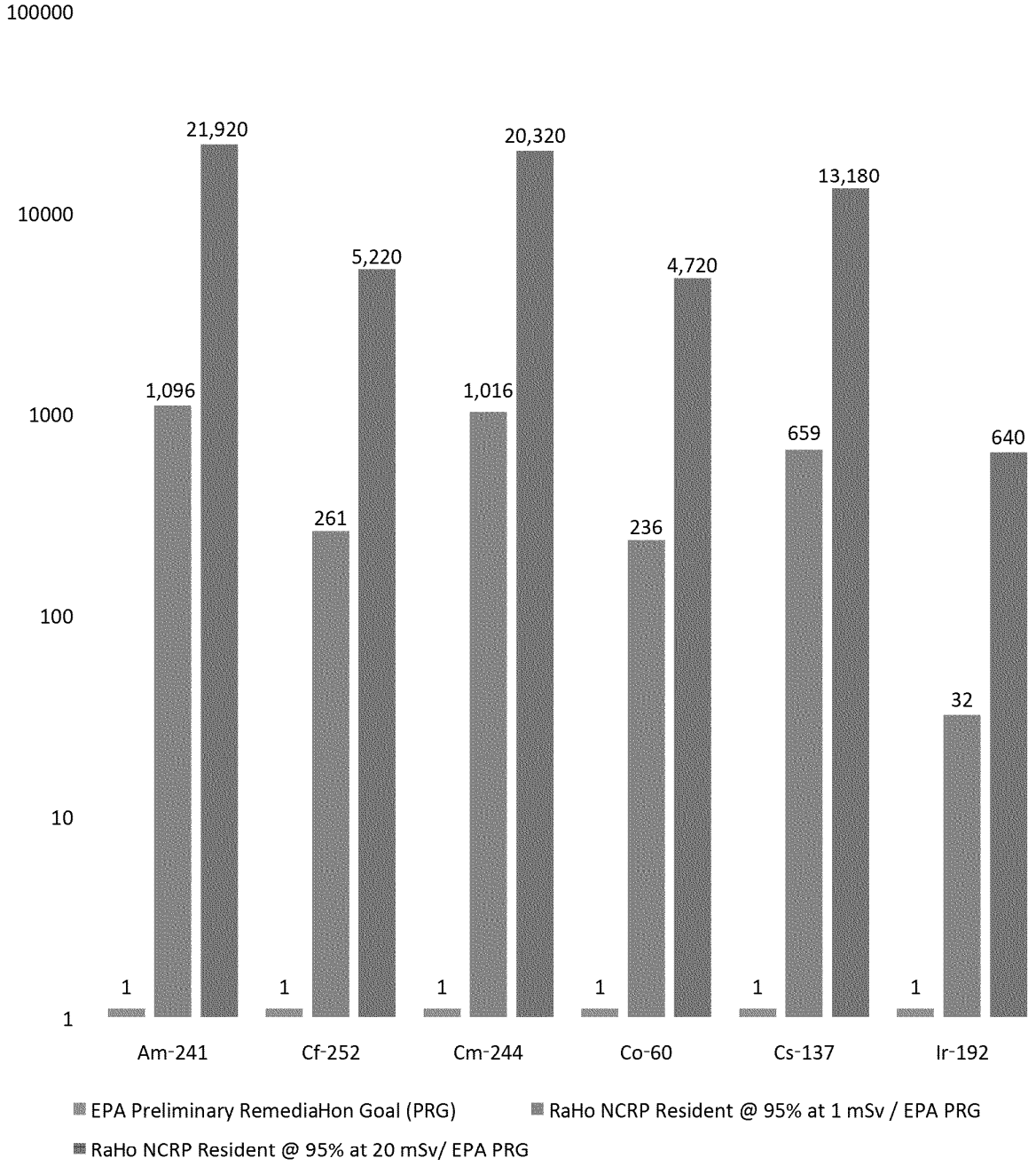


FIGURE 3b

How Many Times More Radioactivity Would be Permitted in Soil for Urban Residents Under NCRP Proposal Compared to EPA's Remediation Goals

(@ 95% Confidence Level)

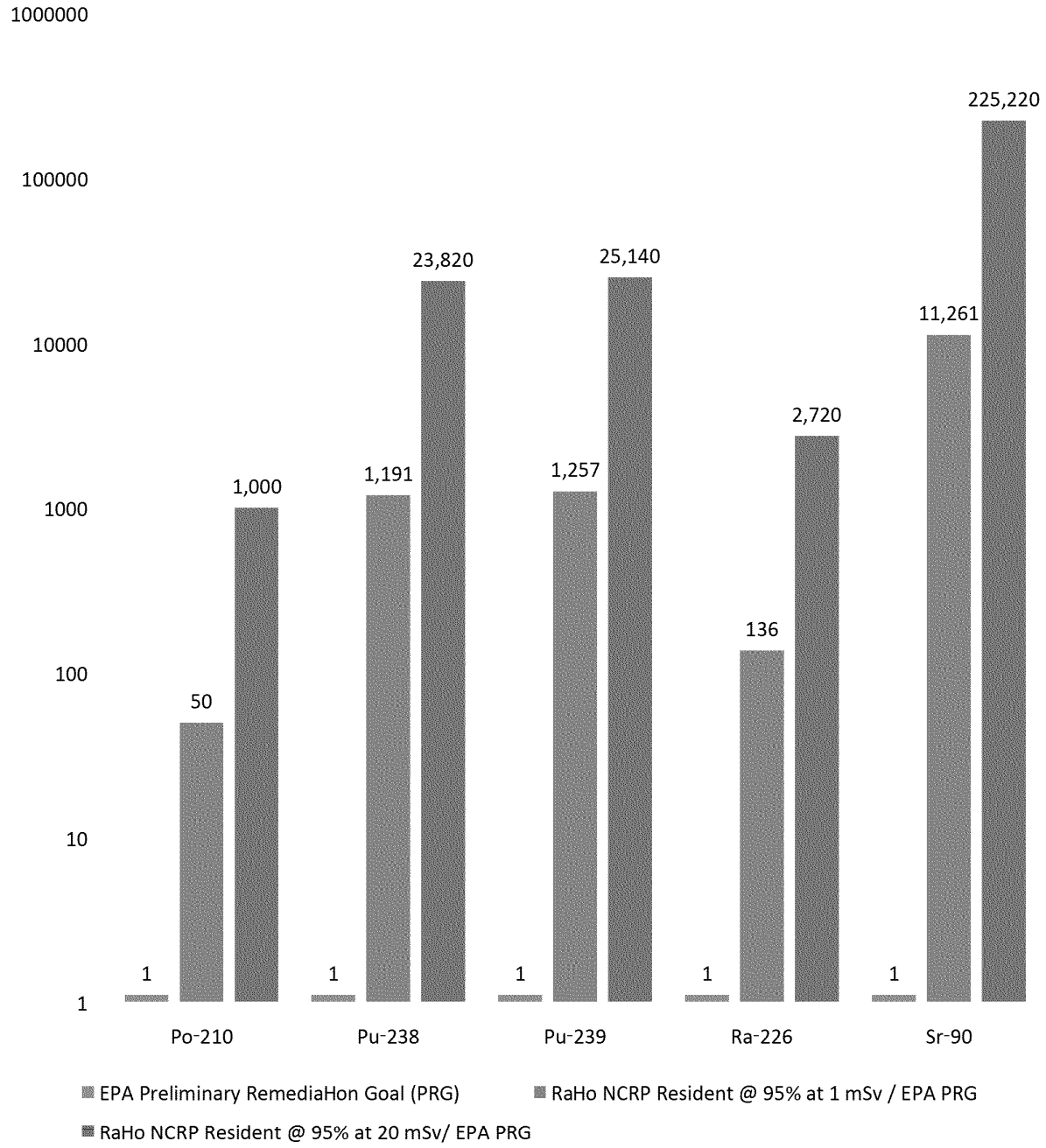


FIGURE 4a

How Many Times More Radioactivity Would be Permitted in Soil for Urban Residents Under NCRP Proposal Compared to EPA's Remediation Goals

(@ 50% Confidence Level)

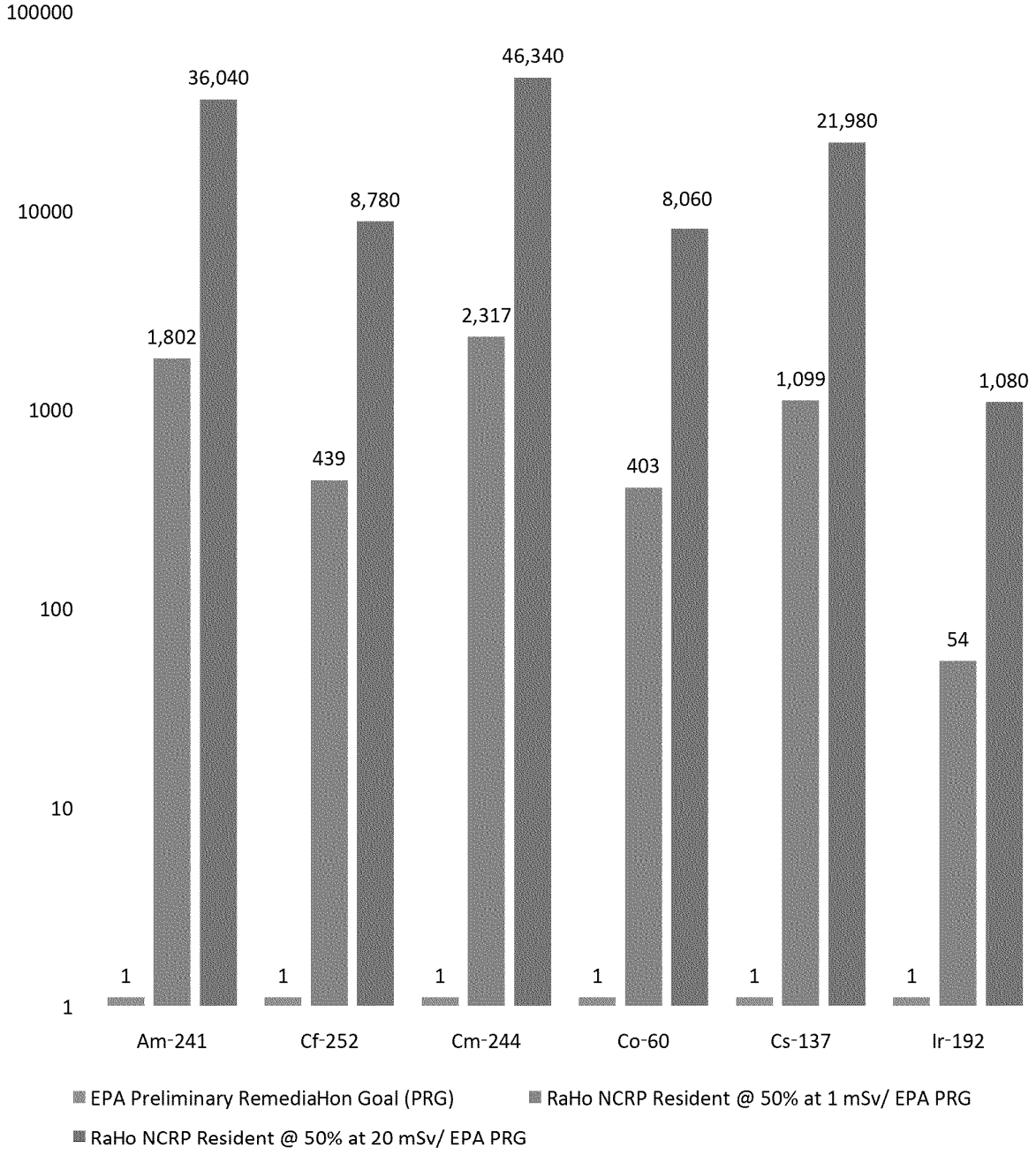


FIGURE 4b

How Many Times More Radioactivity Would be Permitted in Soil for Urban Residents Under NCRP Proposal Compared to EPA's Remediation Goals

(@ 50% Confidence Level)

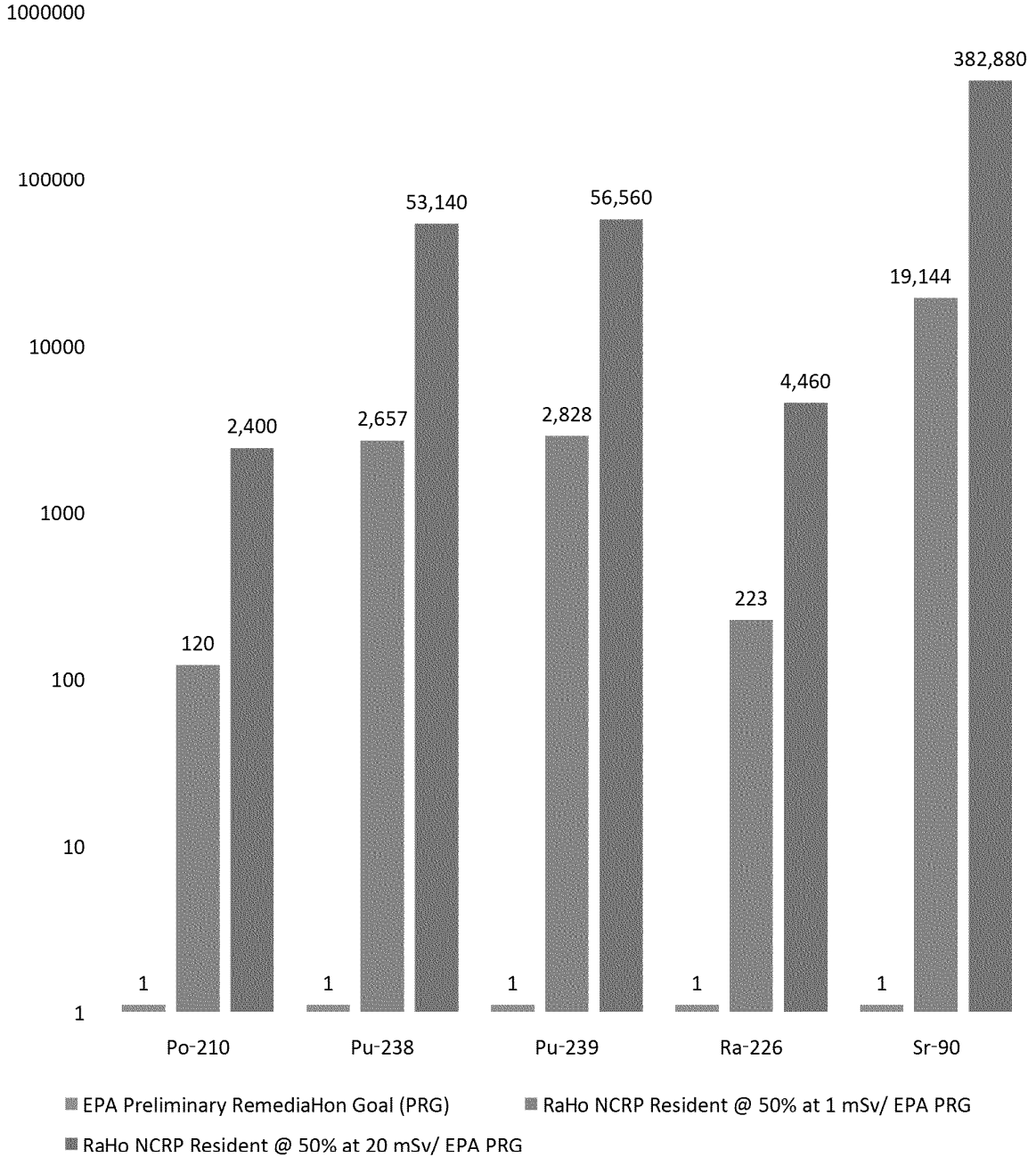


FIGURE 5a

Comparison of NCRP Proposed Permissible Concentrations of Radioactivity in Farmer's Soil in Bq/g Compared to EPA Remediation Goals

(log scale)

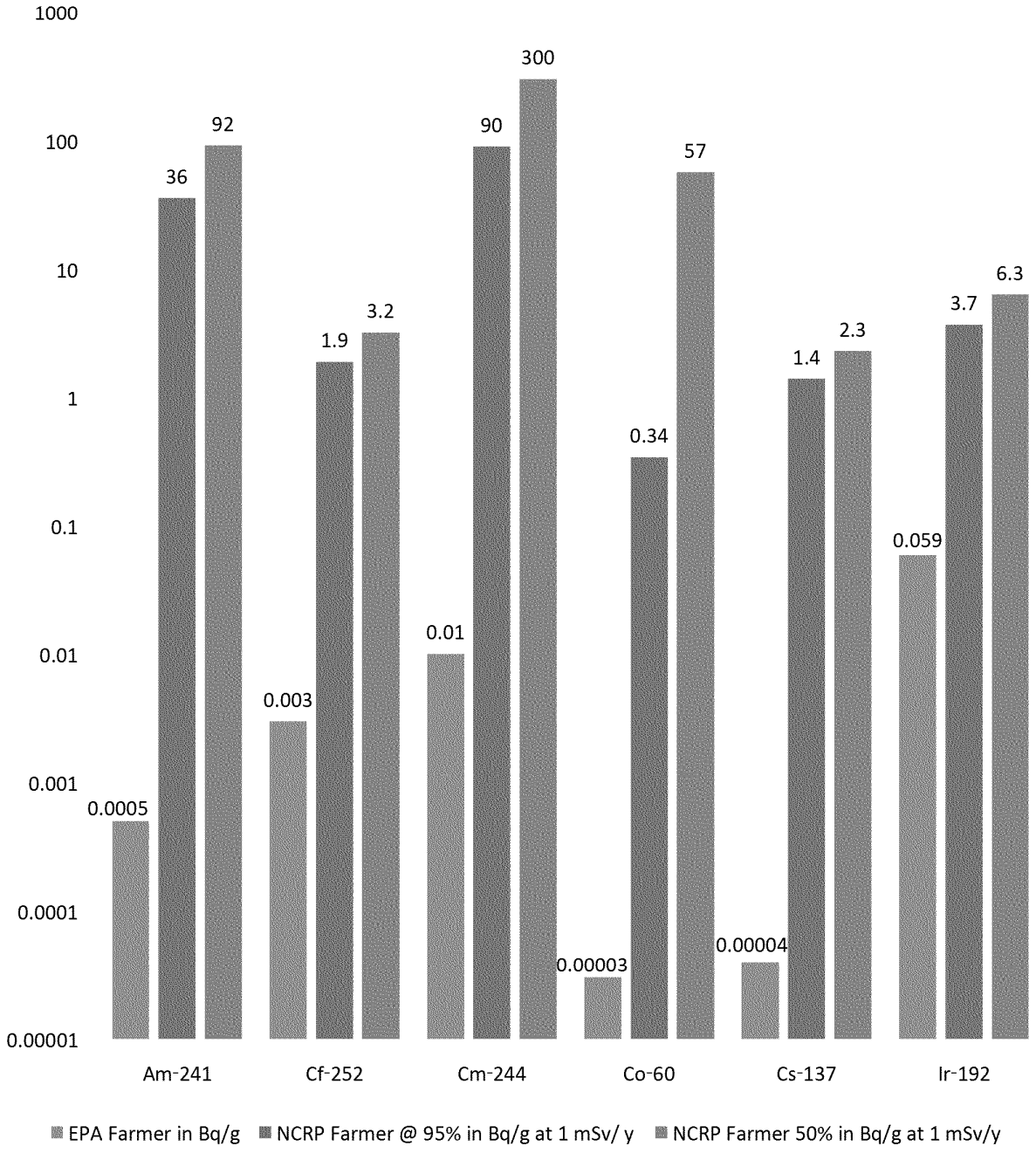


FIGURE 5b

Comparison of NCRP Proposed Permissible Concentrations of Radioactivity in Farmer's Soil in Bq/g Compared to EPA Remediation Goals

(log scale)

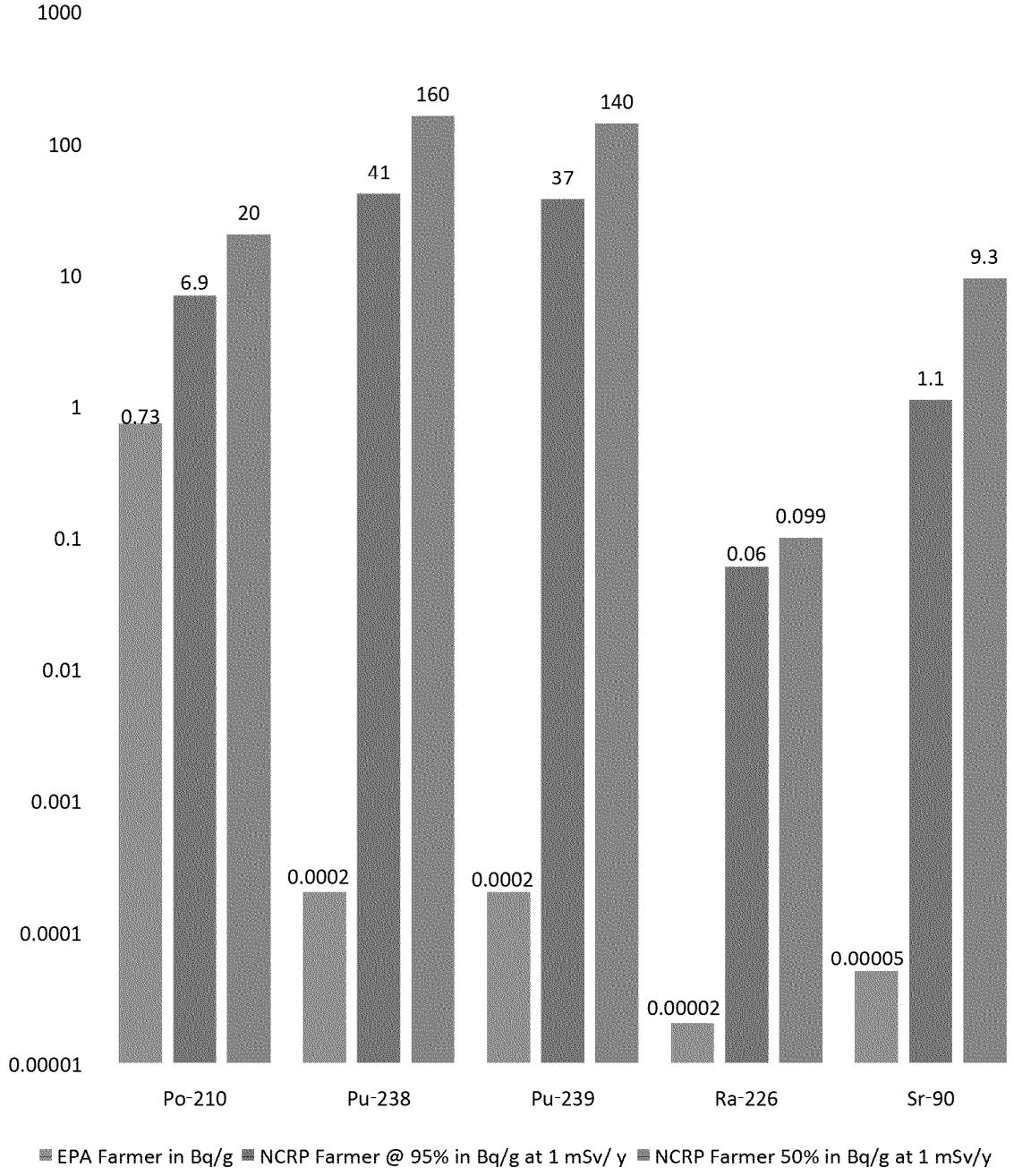


FIGURE 6a

Comparison of NCRP Proposed Permissible Concentrations of Radioactivity in Resident's Soil in Bq/g Compared to EPA Remediation Goals

(log scale)

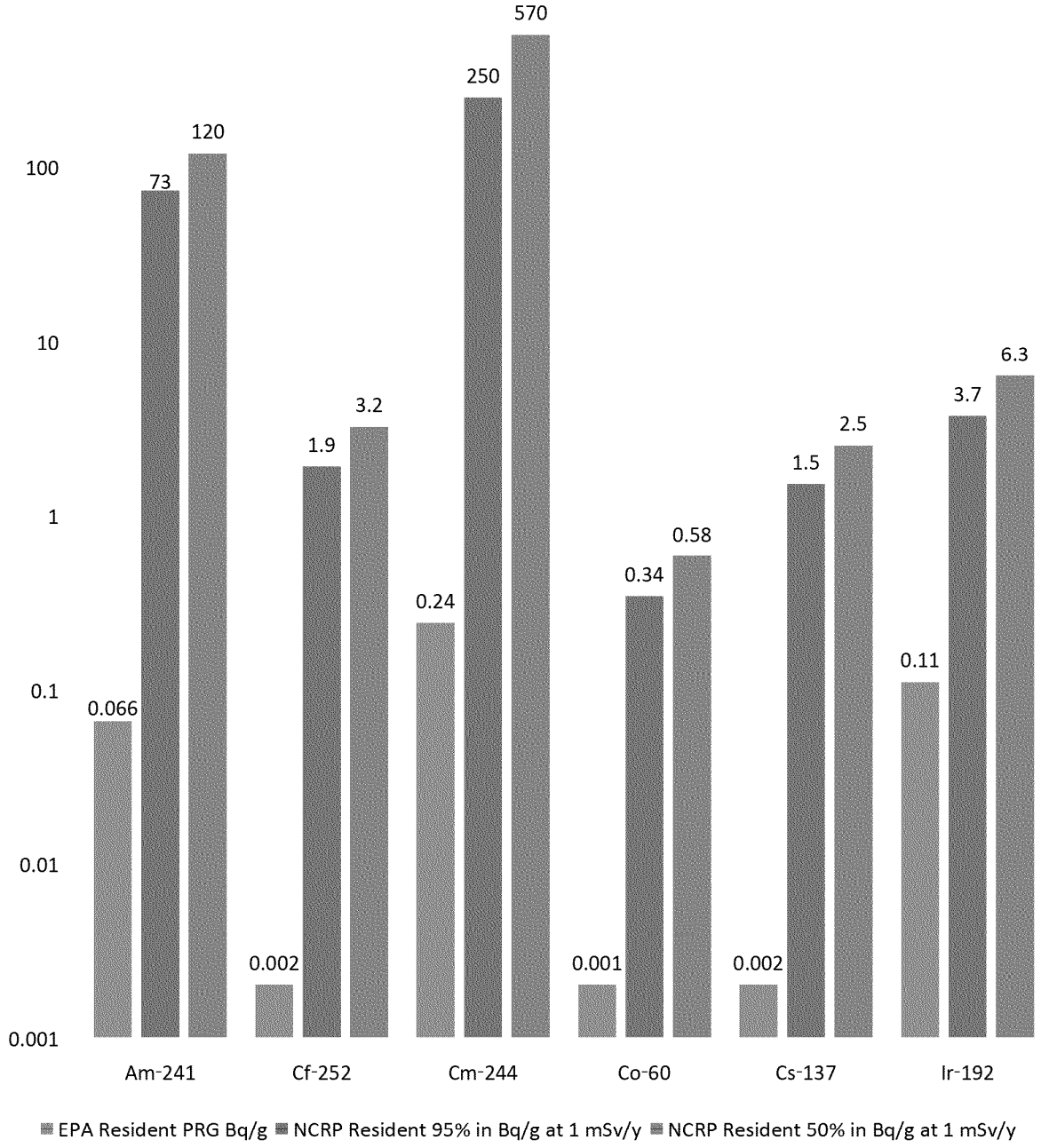
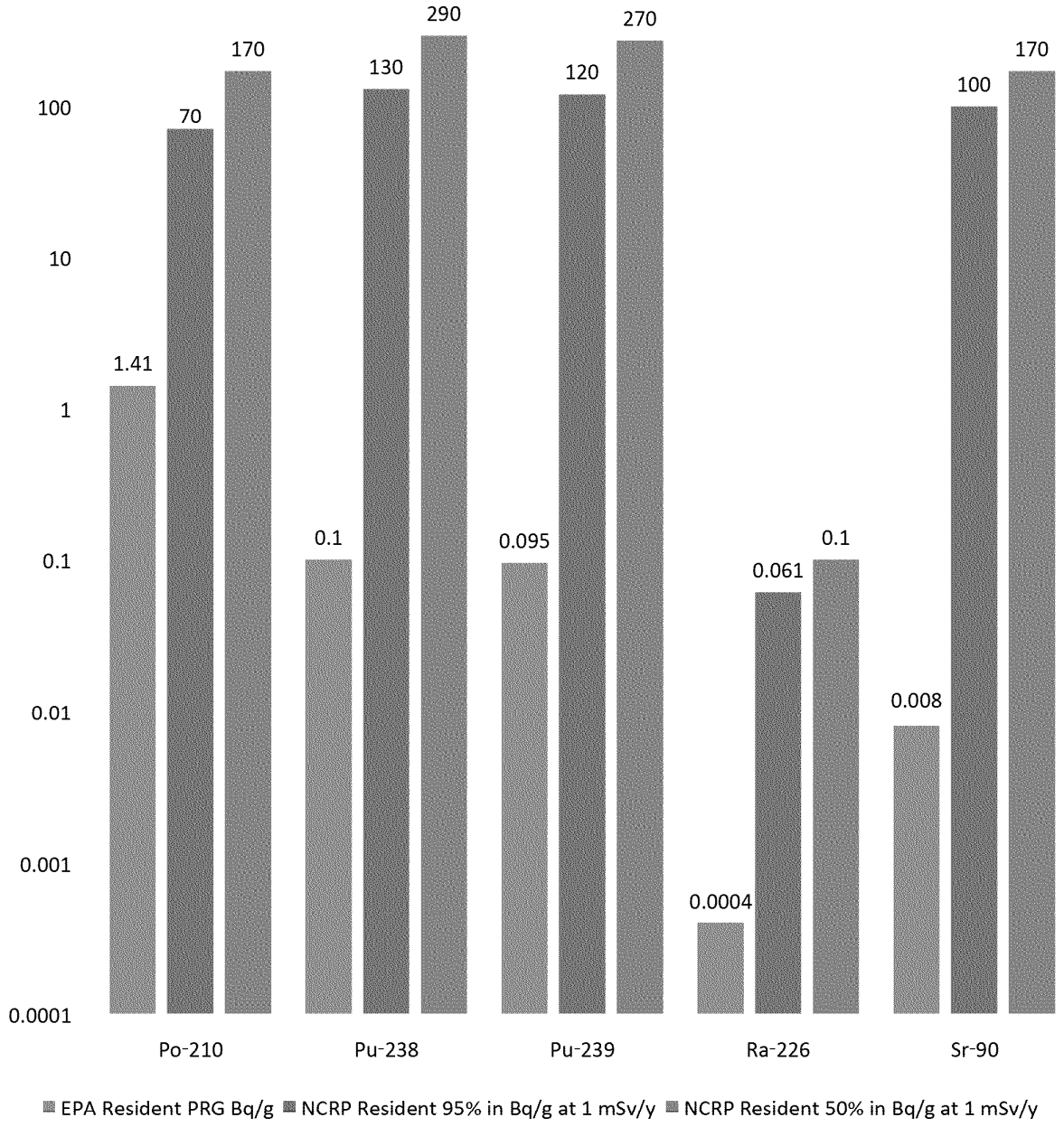


FIGURE 6b

Comparison of NCRP Proposed Permissible Concentrations of Radioactivity in Resident's Soil in Bq/g Compared to EPA Remediation Goals

(log scale)



To: Christ, Lisa[Christ.Lisa@epa.gov]; Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]
From: Burneson, Eric
Sent: Sat 12/5/2015 1:48:51 PM
Subject: Fwd: DW PAG comments
EO12866_PAG for DW_Draft Guidance_20151119 +jcb.docx
ATT00001.htm

Sent from my iPhone

Begin forwarded message:

From: "Beauvais, Joel" <Beauvais.Joel@epa.gov>
Date: December 5, 2015 at 8:36:23 AM EST
To: "Grevatt, Peter" <Grevatt.Peter@epa.gov>, "Burneson, Eric" <Burneson.Eric@epa.gov>
Cc: "Lousberg, Macara" <Lousberg.Macara@epa.gov>
Subject: DW PAG comments

Hi, Peter and Eric - Just a couple minor comments on the draft DW PAG. Well done.

Joel

To: Wadlington, Christina[Wadlington.Christina@epa.gov]
Cc: Christ, Lisa[Christ.Lisa@epa.gov]
From: Hernandez-Quinones, Samuel
Sent: Fri 12/4/2015 8:38:07 PM
Subject: RE: comm materials for drinking water PAG
All PAG Comments except Form Letters-10 21 2013.pdf

Hi Christina,

Attached are the comments we received on the 2012 Draft PAG Proposal.

Sam

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Environmental Protection Agency
Office of Water
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Wadlington, Christina
Sent: Friday, December 04, 2015 2:48 PM
To: Christ, Lisa <Christ.Lisa@epa.gov>
Cc: Burneson, Eric <Burneson.Eric@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Ellis, Jerry <Ellis.Jerry@epa.gov>
Subject: RE: comm materials for drinking water PAG

Thanks! Do you have a second today to chat about the history of this?

It may be helpful to know why this is such a hot topic when responding to inquiries.

Christina Wadlington

U.S. Environmental Protection Agency

Office of Ground Water and Drinking Water

Tel: 202.566.1859

Email: wadlington.christina@epa.gov

From: Christ, Lisa
Sent: Friday, December 04, 2015 12:46 PM
To: Wadlington, Christina <Wadlington.Christina@epa.gov>
Cc: Burneson, Eric <Burneson.Eric@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Ellis, Jerry <Ellis.Jerry@epa.gov>
Subject: comm materials for drinking water PAG

Hi Christina,

The drinking water PAG proposal was transmitted yesterday to OMB for review. Attached are draft communication materials we developed for the PAG.

Lisa

~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

Lisa Christ, Chief
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

Targeting and Analysis Branch

Office of Ground Water and Drinking Water

USEPA

1200 Pennsylvania Ave NW
Washington, DC 20460-0001
phone: 202.564.8354
fax: 202.564-3760

Mail Code: 4607M

To: Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]; Ellis, Jerry[Ellis.Jerry@epa.gov]; DeCair, Sara[DeCair.Sara@epa.gov]
Cc: Christ, Lisa[Christ.Lisa@epa.gov]
From: Veal, Lee
Sent: Thur 12/3/2015 10:05:58 PM
Subject: APPROVED for OMB - Draft Protective Action Guide (PAG) for Drinking Water (5198)
EO12866_PAG for DW_Draft Guidance_20151119.docx

Sam, Jerry and Sara,

Congratulations on a successful launch to OMB! This is pretty exciting news. I know it is not over, but this is a big deal. Thank you for your thoughtful and imaginative approach toward the development of a drinking water PAG and chapter.

Lee

Lee Ann B. Veal

Director, Center for Radiological Emergency Management

Radiation Protection Division

Office of Radiation and Indoor Air

Office: 202-343-9448

Cell: 202-617-4322

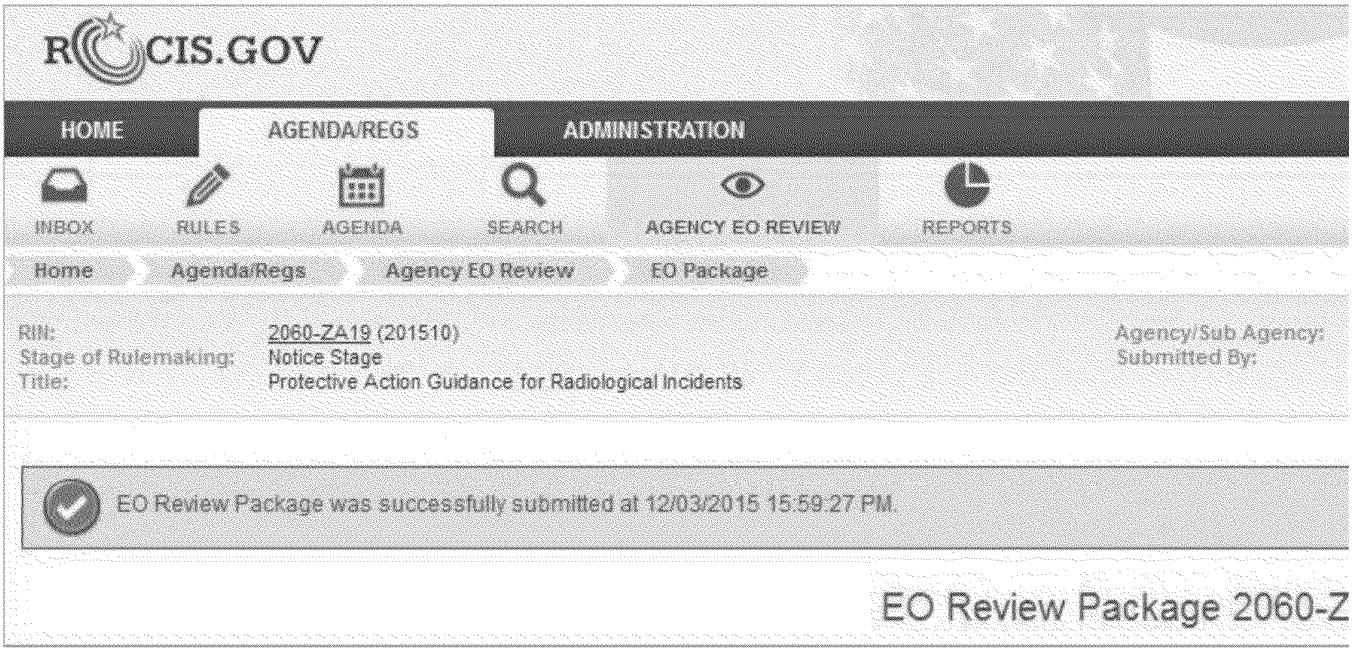
www.epa.gov/radiation

From: DeCair, Sara
Sent: Thursday, December 03, 2015 4:19 PM
To: Veal, Lee <Veal.Lee@epa.gov>; Perrin, Alan <Perrin.Alan@epa.gov>; Edwards, Jonathan <Edwards.Jonathan@epa.gov>
Cc: Wieder, Jessica <Wieder.Jessica@epa.gov>; Lee, Raymond <Lee.Raymond@epa.gov>
Subject: FW: APPROVED for OMB - Draft Protective Action Guide (PAG) for Drinking Water (5198)

Whoo hoo!!

From: Muellerleile, Caryn
Sent: Thursday, December 03, 2015 4:07 PM
To: Nickerson, William <Nickerson.William@epa.gov>; Corrales, Mark <Corrales.Mark@epa.gov>; Balserak, Paul <Balserak.Paul@epa.gov>; Owens, Nicole <Owens.Nicole@epa.gov>; Curry, Bridgid <Curry.Bridgid@epa.gov>; Pritchard, Eileen <Pritchard.Eileen@epa.gov>; Kime, Robin <Kime.Robin@epa.gov>; Hill, Glynis <Hill.Glynis@epa.gov>
Cc: Eagles, Tom <Eagles.Tom@epa.gov>; Morgan, Ruthw <morgan.ruthw@epa.gov>; Evalenko, Sandy <Evalenko.Sandy@epa.gov>; Gude, Karen <Gude.Karen@epa.gov>; Lee, Ray <Lee.Ray@epa.gov>; Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; DeCair, Sara <DeCair.Sara@epa.gov>; Klasen, Matthew <Klasen.Matthew@epa.gov>; Knapp, Kristien <Knapp.Kristien@epa.gov>
Subject: APPROVED for OMB - Draft Protective Action Guide (PAG) for Drinking Water (5198)

Today, OP approved the guidance **Draft Protective Action Guide (PAG) for Drinking Water** (5198, RIN 2060-ZA19) for transmission to OMB for interagency review. This tier 4 guidance was developed between OW's Office of Groundwater Drinking Water and OAR's Office of Radiation and Indoor Air. The attached draft guidance has been submitted to OMB via the interagency database 'ROCIS.'



Caryn Muellerleile

Regulatory Management Division

Office of Policy

US Environmental Protection Agency

1200 Pennsylvania Ave NW (1803A)

Washington, DC 20460

(202) 564-2855

muellerleile.caryn@epa.gov

To: Veal, Lee[Veal.Lee@epa.gov]; Perrin, Alan[Perrin.Alan@epa.gov]; Christ, Lisa[Christ.Lisa@epa.gov]; Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]; Edwards, Jonathan[Edwards.Jonathan@epa.gov]
From: DeCair, Sara
Sent: Tue 12/1/2015 9:03:20 PM
Subject: Fw: PAG Questions from OP

Just FYI, I spoke with my good friend Glynis this afternoon to talk through the questions below. Sounds like OP has come back to her for a little more detail on the policy analysis, and I talked her through each of the items below for the drinking water proposal.

Stay tuned, all!

- Sara

From: Hill, Glynis
Sent: Tuesday, December 1, 2015 3:30 PM
To: DeCair, Sara
Subject: PAG Questions

Hey Sara:

Please; can you answer these questions for me quickly?

1. If Fukushima happened in 2011 but the PAGs were revised in 2013, why wasn't the water PAG included in 2013?

2. Can we put 100 or 500 mrem into some context? Does that translate to cancer risk, or is that high or low relative to other water standards?

3. Do we have any inkling of the likely reactions from other federal agencies?

Thanks in advance,

Glynis Hill – Environmental Scientist | Office of the Administrator | Office of Policy | Office of Regulatory Policy & Management

(202) 564-1139 | 3512V WJC North | Mail Code 1803 | 1200 Pennsylvania Avenue, NW | Washington, DC 20460

To: Christ, Lisa[Christ.Lisa@epa.gov]
From: Hernandez-Quinones, Samuel
Sent: Mon 11/30/2015 7:28:55 PM
Subject: Re: PAG briefing
Background on Radionuclides and PAG 11_30_15.docx

Hi Lisa,

Ex. 5 - Deliberative Process I am attaching the file with the revised numbers.

Sam

Ex. 5 - Deliberative Process

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Environmental Protection Agency
Office of Water
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Christ, Lisa
Sent: Monday, November 30, 2015 1:58 PM
To: Hernandez-Quinones, Samuel
Subject: Re: PAG briefing

Hi Sam
Just wanted to check in on the PAG background
Thanks
Lisa

Sent from my iPhone

On Nov 25, 2015, at 1:19 PM, Christ, Lisa <Christ.Lisa@epa.gov> wrote:

Hi Sam,

Great job on the briefing with Eric. It's a lot of material to cover.

I looked over the PAG materials and made revisions to the briefing, which Eric is reviewing. **Ex. 5 - Deliberative Process**
Ex. 5 - Deliberative Process Please make this and any other changes you think are needed by noon Monday and send to me.

Thanks!

Lisa

~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

Lisa Christ, Chief

Targeting and Analysis Branch

Office of Ground Water and Drinking Water

USEPA

1200 Pennsylvania Ave NW
Washington, DC 20460-0001
phone: 202.564.8354
fax: 202.564-3760

Mail Code: 4607M

<Background on Radionuclides and PAG 11_2_15.docx>
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

To: Christ, Lisa[Christ.Lisa@epa.gov]; Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]
Cc: Flaharty, Stephanie[Flaharty.Stephanie@epa.gov]
From: Bangser, Paul
Sent: Tue 11/24/2015 4:31:43 PM
Subject: Who Signs the Drinking Water PAGs

Lisa, Sam,

I raised with Sam the issue of who is the right official to sign the proposed drinking water PAGs. We need to determine whether it must be the Administrator, or can be the AA. I'm looking into this issue, so please stay tuned. For the 2013 proposed revisions to the air PAGS, note that Bob P signed the FR Notice as the Acting Administrator.

Thanks,

Paul Bangser
Attorney, Cross-Cutting Issues Law Office
Office of General Counsel
U.S. Environmental Protection Agency
202-564-5479
bangser.paul@epa.gov

To: Christ, Lisa[Christ.Lisa@epa.gov]; Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]
Cc: Veal, Lee[Veal.Lee@epa.gov]; Perrin, Alan[Perrin.Alan@epa.gov]; Edwards, Jonathan[Edwards.Jonathan@epa.gov]; Stahle, Susan[Stahle.Susan@epa.gov]
From: DeCair, Sara
Sent: Tue 11/24/2015 4:07:53 PM
Subject: Water law ofc question via phone today

Lisa, Sam,

I got a voice mail this morning from Paul Bangser of the Water Law Office asking me about the rationale for which level should sign the FR notice for the drinking water PAG proposal. I returned his message explaining that the full Manual has a broader scope so indeed was signed at the DA level, and the authority to develop PAGs has not been delegated down to AA or ODs level. However, since the PAGs are non-regulatory guidance and this is just a notice of availability, we'd suggest that signing at the AA level should be fine (and might make things quicker, even with a new AA).

Have a lovely holiday,

Sara D. DeCair

http://www.epa.gov/radiation/rert/pags.html

202-343-9108

Room 1416 B in WJC West

To: Veal, Lee[Veal.Lee@epa.gov]; Christ, Lisa[Christ.Lisa@epa.gov]; Perrin, Alan[Perrin.Alan@epa.gov]; Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]
Cc: Cherepy, Andrea[Cherepy.Andrea@epa.gov]; Lee, Raymond[Lee.Raymond@epa.gov]
From: DeCair, Sara
Sent: Thur 11/19/2015 9:07:46 PM
Subject: Broken links fixed: PAG proposal new version
EO12866_PAG for DW_Draft Guidance_20151119.docx

Glynis caught a broken link! We quickly checked all of them and replaced four total. This new revision is now up on the One Drive folder, attached as well. It appears OP has moved this from Policy Analysis to Reg Process review (but I don't really know what that means for timing).

S.

Sara D. DeCair

http://www.epa.gov/radiation/rert/pags.html

202-343-9108

Room 1416 B in WJC West

To: Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]
Cc: Christ, Lisa[Christ.Lisa@epa.gov]; Flaharty, Stephanie[Flaharty.Stephanie@epa.gov]; Wehling, Carrie[Wehling.Carrie@epa.gov]; Neugeboren, Steven[Neugeboren.Steven@epa.gov]; Stahle, Susan[Stahle.Susan@epa.gov]
From: Bangser, Paul
Sent: Thur 11/19/2015 7:21:32 PM
Subject: Concurrence on DW PAG Draft Document
PAG Proposal Clean 10-29-2015.docx

Hi Sam,

I am writing to give you OGC's concurrence regarding the attached document, "Draft Protective Action Guide (PAG) for Drinking Water," dated Oct. 21, 2015, which we understand the Office of Water is seeking to move forward for proposal and public comment. We concur with moving this document forward for proposal.

Thanks,

Paul Bangser

Attorney, EPA Office of General Counsel

202-564-5479

bangser.paul@epa.gov

From: Hernandez-Quinones, Samuel
Sent: Tuesday, November 03, 2015 9:55 AM
To: Bangser, Paul <bangser.paul@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>
Subject: RE: DW PAG Draft Document

Hi Paul,

Here is the most recent version of the document. There are no significant changes from the version you reviewed.

Thank You

Sam

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Environmental Protection Agency
Office of Water
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

To: Christ, Lisa[Christ.Lisa@epa.gov]
From: Veal, Lee
Sent: Thur 11/5/2015 4:17:40 PM
Subject: RE: Question

Lisa,

If we can be helpful, sure. If you guys want to have an internal brief first, then don't worry about it at all. We just met with a path forward draft here with Jon Edwards and Alan Perrin. We're focusing on the full manual this term! The question came up about who was now in OP, and we thought we should ask about briefing Joel. I suspect that the OP AA and OW AA will be talking soon about the water PAG given it is headed there (or perhaps there already).

Lee

Lee Ann B. Veal
Director, Center for Radiological Emergency Management
Radiation Protection Division
Office of Radiation and Indoor Air
Office: 202-343-9448
Cell: 202-617-4322
www.epa.gov/radiation

-----Original Message-----
From: Christ, Lisa
Sent: Thursday, November 05, 2015 11:13 AM
To: Veal, Lee <Veal.Lee@epa.gov>
Subject: RE: Question

Yes -- he has asked for background briefings for all our projects. I plan to use the Stan M. briefing and the PAGS 101 y'all prepared. Would you like ti be included on the invitation?
Lisa

-----Original Message-----
From: Veal, Lee
Sent: Thursday, November 05, 2015 10:56 AM
To: Christ, Lisa <Christ.Lisa@epa.gov>
Subject: Question

Lisa,

Are you guys planning to brief Joel on the drinking water PAG once he starts?

Lee

Lee Ann B Veal
Director, Center for Radiological Emergency Management Office of Radiation and Indoor Air USEPA
Office 202-343-9448 Cell 202-617-4322

To: Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]
Cc: Christ, Lisa[Christ.Lisa@epa.gov]; Veal, Lee[Veal.Lee@epa.gov]
From: DeCair, Sara
Sent: Wed 11/4/2015 6:38:36 PM
Subject: OGC ARLO "no comment"

Fyi, I had previously only had a voice mail noted from Sue but Sam and I asked OGC to come back in writing for the documentation for OP.

Sent from my iPhone

Begin forwarded message:

From: "Stahle, Susan" <Stahle.Susan@epa.gov>
Date: November 4, 2015 at 1:29:53 PM EST
To: "DeCair, Sara" <DeCair.Sara@epa.gov>
Subject: RE: OP needs your "no comment" in writing on PAG

Thanks Sara. I gave this a quick read and have no comments on it. I confirmed with Brian Doster that he does not plan to review it. As such, ARLO gives you the go ahead to move this forward as we have no comments on it.

Susan Stahle

Attorney-Advisor

Air and Radiation Law Office

Office of General Counsel

U.S. Environmental Protection Agency

202-564-1272 (ph)

202-564-5603 (fax)

stahle.susan@epa.gov

From: DeCair, Sara
Sent: Wednesday, November 04, 2015 9:33 AM

To: Stahle, Susan <Stahle.Susan@epa.gov>
Subject: RE: OP needs your "no comment" in writing on PAG

Sue, here is the version of the proposal that went to OP the other day. You'll see only minor wording changes based on OSWER input. Thank you for your help!

Sara

From: Stahle, Susan
Sent: Tuesday, November 03, 2015 5:49 PM
To: DeCair, Sara <DeCair.Sara@epa.gov>
Subject: RE: OP needs your "no comment" in writing on PAG

Hi –

Can we talk briefly in the morning about this? I feel like I need to make sure my colleagues in WLO were able to review and comment on this. I forwarded it to them on 5/5/15 but haven't heard a thing since (e.g. not sure if there was a revised version that was circulated).

Susan Stahle

Attorney-Advisor

Air and Radiation Law Office

Office of General Counsel

U.S. Environmental Protection Agency

202-564-1272 (ph)

202-564-5603 (fax)

stahle.susan@epa.gov

From: DeCair, Sara
Sent: Tuesday, November 03, 2015 3:34 PM
To: Stahle, Susan <Stahle.Susan@epa.gov>
Subject: OP needs your "no comment" in writing on PAG

Sue,

I wrote down that I got a VM from you in July with no comments on the drinking water PAG proposal and now I'm learning from the OW submission of the FR package to OP that they want that in writing. Would it work for you to reply to this message, do you think? I hope that will be okay. Do call or write if you have questions, thank you!

Sara

Sara D. DeCair

http://www.epa.gov/radiation/rert/pags.html

202-343-9108

Room 1416 B in WJC West

To: Evalenko, Sandy[Evalenko.Sandy@epa.gov]; Gude, Karen[Gude.Karen@epa.gov]
Cc: Greene, Ashley[Greene.Ashley@epa.gov]; Galada, Heather[Galada.Heather@epa.gov]; Christ, Lisa[Christ.Lisa@epa.gov]; Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]
From: Flaharty, Stephanie
Sent: Tue 11/3/2015 6:11:08 PM
Subject: Protective Action Guide for Drinking Water Pkg. for OMB Review [SAN 5198]
EO12866_PAG for DW_Draft Guidance_20151030.docx
PAG - Communication Strategy.10.30.15.pdf
PAG Transmittal memo Ken to Joel AA of OP.10-30-15.pdf
PAG Transmittal memo PG to KK 10-30-15.docx.pdf

Hello,

Please find attached our draft PAG in Drinking Water submittal to OMB for review. This draft document will be posted for public comment after OMB review is completed.

Steph Flaharty

Sr. Reg. Mgr./FOIA Public Liaison

Office of Ground Water and Drinking Water

(202) 564-5072

To: Bangser, Paul[bangser.paul@epa.gov]; Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]
Cc: Christ, Lisa[Christ.Lisa@epa.gov]
From: Flaharty, Stephanie
Sent: Tue 11/3/2015 2:59:00 PM
Subject: RE: DW PAG Draft Document
EO12866_PAG for DW_Draft Guidance_20151030.docx

Paul, I've attached the most current version. We appreciate your concurrence ASAP (I understand that you have already reviewed the document and concurred verbally over the phone to Sam).

Thanks !

Steph Flaharty

Sr. Reg. Mgr./FOIA Public Liaison

Office of Ground Water and Drinking Water

(202) 564-5072

From: Bangser, Paul
Sent: Tuesday, November 03, 2015 9:47 AM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>
Subject: RE: DW PAG Draft Document

Hi Sam,

Just back in the office today. Can you please send the document itself, so it's clear what version we're concurring on? I'll turn it around when I get it.

Thanks,

Paul

Paul Bangser

Attorney, EPA Office of General Counsel

202-564-5479

bangser.paul@epa.gov

From: Hernandez-Quinones, Samuel
Sent: Friday, October 30, 2015 10:50 AM
To: Bangser, Paul <bangser.paul@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>
Subject: Fw: DW PAG Draft Document

Hi Paul,

As you might recall a few months ago you reviewed our Proposal for a draft Drinking Water PAG. At that time you suggested some edits to the proposal (which were incorporated), and then after coordinating with OGC-Air you provided your No-Legal Objection in a voice message to me.

I followed up with a message (attached below) to confirm that concurrence had being received from OGC.

As we are moving the package up to agency leadership, I have been told that a written message (email) from OGC is required to confirm that documents have been reviewed

and cleared by OGC.

I wanted to ask if you could please reply to my July 2, 2015, to acknowledge that OGC-Water Law Office had cleared the Drinking Water PAG document.

Thank You

Sam

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Environmental Protection Agency
Office of Water
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Hernandez-Quinones, Samuel
Sent: Thursday, July 2, 2015 6:41 PM
To: Bangser, Paul
Cc: Christ, Lisa
Subject: DW PAG Draft Document

Hi Paul,

I got your voice message about your review of the draft PAG Document. Thank You for your review and for the NLO. I will keep you posted as we move forward with this proposal.

Thank You

Sam

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Environmental Protection Agency
Office of Water
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

To: Veal, Lee[Veal.Lee@epa.gov]; DeCair, Sara[DeCair.Sara@epa.gov]; Christ, Lisa[Christ.Lisa@epa.gov]
Cc: Edwards, Jonathan[Edwards.Jonathan@epa.gov]
From: Perrin, Alan
Sent: Thur 10/29/2015 11:48:26 PM
Subject: Fwd: PAGS guidance

FYI

~~~~~~~~~~~~~~

Alan Perrin
dsk 202-343-9775
mbl 202-279-0376

Begin forwarded message:

From: "Flynn, Mike" <Flynn.Mike@epa.gov>
Date: October 29, 2015 at 7:08:48 PM EDT
To: "Grevatt, Peter" <Grevatt.Peter@epa.gov>
Cc: "Edwards, Jonathan" <Edwards.Jonathan@epa.gov>, "Cherepy, Andrea" <Cherepy.Andrea@epa.gov>, "Perrin, Alan" <Perrin.Alan@epa.gov>
Subject: Fwd: PAGS guidance

FYI

Sent from my iPhone

Begin forwarded message:

From: "McCabe, Janet" <McCabe.Janet@epa.gov>
Date: October 29, 2015 at 7:03:40 PM EDT
To: "Kopocis, Ken" <Kopocis.Ken@epa.gov>
Cc: "Flynn, Mike" <Flynn.Mike@epa.gov>, "Stewart, Lori" <Stewart.Lori@epa.gov>, "Cherepy, Andrea" <Cherepy.Andrea@epa.gov>
Subject: PAGS guidance

Ken,

Thank you and your staff for working with OAR to finalize the "Draft Protective
~~~~~~~~~~~~~~

Action Guide for Drinking Water." This guidance is vital as we continue working to protect the public in the event of a radiological incident. As you can see below, my comments and edits have been addressed and incorporated into this action. Therefore, I concur on sending this forward to OMB (with the changes identified below).

I understand tomorrow is your last day here at EPA. I wish you the best, and have enjoyed working with you.

Janet

Ex. 5 - Deliberative Process

Ex. 5 - Deliberative Process

Ex. 5 - Deliberative Process

To: Oshida, Phil[Oshida.Phil@epa.gov]; Christ, Lisa[Christ.Lisa@epa.gov]
Cc: Greene, Ashley[Greene.Ashley@epa.gov]; Burneson, Eric[Burneson.Eric@epa.gov]; Clark, Becki[Clark.Becki@epa.gov]
From: Grevatt, Peter
Sent: Thur 10/29/2015 11:44:49 PM
Subject: Fwd: PAGS guidance

FYI. Steph mentioned that she had sent this back to you over some formatting issues. Let me know in the AM whether we'll have something I can give to Ken tomorrow. Thanks. Moving in the right direction!

Sent from my iPhone

Begin forwarded message:

From: "Flynn, Mike" <Flynn.Mike@epa.gov>
Date: October 29, 2015 at 7:08:48 PM EDT
To: "Grevatt, Peter" <Grevatt.Peter@epa.gov>
Cc: "Edwards, Jonathan" <Edwards.Jonathan@epa.gov>, "Cherepy, Andrea" <Cherepy.Andrea@epa.gov>, "Perrin, Alan" <Perrin.Alan@epa.gov>
Subject: Fwd: PAGS guidance

FYI

Sent from my iPhone

Begin forwarded message:

From: "McCabe, Janet" <McCabe.Janet@epa.gov>
Date: October 29, 2015 at 7:03:40 PM EDT
To: "Kopocis, Ken" <Kopocis.Ken@epa.gov>
Cc: "Flynn, Mike" <Flynn.Mike@epa.gov>, "Stewart, Lori" <Stewart.Lori@epa.gov>, "Cherepy, Andrea" <Cherepy.Andrea@epa.gov>
Subject: PAGS guidance

Ken,

Thank you and your staff for working with OAR to finalize the "Draft Protective

Action Guide for Drinking Water." This guidance is vital as we continue working to protect the public in the event of a radiological incident. As you can see below, my comments and edits have been addressed and incorporated into this action. Therefore, I concur on sending this forward to OMB (with the changes identified below).

I understand tomorrow is your last day here at EPA. I wish you the best, and have enjoyed working with you.

Janet

Ex. 5 - Deliberative Process

Ex. 5 - Deliberative Process

Ex. 5 - Deliberative Process

Ex. 5 - Deliberative Process

To: Christ, Lisa[Christ.Lisa@epa.gov]
From: DeCair, Sara
Sent: Thur 10/29/2015 6:52:19 PM
Subject: Here's the FR, got the proposal?
FR Notice drinking water PAG clean 10-29-2015.docx
FR Notice drinking water PAG Redline 10-29-2015.docx

I guess Janet's office wants to see these two redlines so here is the FR (I put these on the OneDrive as well). When you have the proposal one done, just shoot me a copy so we can send them up. Many thanks!!

Sara D. DeCair

http://www.epa.gov/radiation/rert/pags.html

202-343-9108

Room 1416 B in WJC West

To: Christ, Lisa[Christ.Lisa@epa.gov]
Cc: Ellis, Jerry[Ellis.Jerry@epa.gov]
From: Hernandez-Quinones, Samuel
Sent: Thur 10/29/2015 6:25:40 PM
Subject: RE: Janet comments the DW PAG

Hi Lisa,

Here's the folder.

Go to Water PAG FR Package

Sam

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Environmental Protection Agency
Office of Water
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Christ, Lisa
Sent: Thursday, October 29, 2015 1:35 PM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Cc: Ellis, Jerry <Ellis.Jerry@epa.gov>
Subject: RE: Janet comments the DW PAG

Thanks Sam! Can you please resend the link to the SharePoint site?

From: Hernandez-Quinones, Samuel
Sent: Thursday, October 29, 2015 12:55 PM
To: Christ, Lisa <Christ.Lisa@epa.gov>
Cc: Ellis, Jerry <Ellis.Jerry@epa.gov>
Subject: RE: Janet comments the DW PAG

Hi Lisa,

I just made the changes to the file. The latest version is on sharepoint.

Sam

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Environmental Protection Agency
Office of Water
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Christ, Lisa
Sent: Thursday, October 29, 2015 12:30 PM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>

Cc: Ellis, Jerry <Ellis.Jerry@epa.gov>
Subject: FW: Janet comments the DW PAG
Importance: High

Hi Sam,

The only change we will be making to the proposal is #6 below (highlighted). Please revise the document on the sharepoint site so we all have access to the latest version. Sara is making the change to the FRN (#2) and will post it on sharepoint.

Sam

From: Perrin, Alan
Sent: Thursday, October 29, 2015 10:24 AM
To: Flynn, Mike <Flynn.Mike@epa.gov>; Cherepy, Andrea <Cherepy.Andrea@epa.gov>; Edwards, Jonathan <Edwards.Jonathan@epa.gov>
Cc: DeCair, Sara <DeCair.Sara@epa.gov>; Veal, Lee <Veal.Lee@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>
Subject: FW: Janet comments the DW PAG
Importance: High

Please see the ORIA/OW response to Janet's comments on the PAG Manual's draft drinking water chapter. My understanding is that we have an informal green light from the OAR IO to proceed with this package; we will let OW know. Note that this is Ken Kopocis' last week in the office, so the timing works well. Please let me know if you need any additional information. Thanks, Alan

Alan Perrin, Deputy Director
Radiation Protection Division, USEPA
ofc (202) 343-9775 | mbl (202) 279-0376

From: DeCair, Sara
Sent: Thursday, October 29, 2015 8:42 AM
To: Perrin, Alan <Perrin.Alan@epa.gov>
Cc: Veal, Lee <Veal.Lee@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>
Subject: RE: Janet comments for PAGs

Ex. 5 - Deliberative Process

Ex. 5 - Deliberative Process

From: Cherepy, Andrea
Sent: Wednesday, October 28, 2015 9:30 AM
To: Edwards, Jonathan <Edwards.Jonathan@epa.gov>; Perrin, Alan <Perrin.Alan@epa.gov>; Veal, Lee <Veal.Lee@epa.gov>; DeCair, Sara <DeCair.Sara@epa.gov>
Cc: Flynn, Mike <Flynn.Mike@epa.gov>
Subject: FW: Janet comments for PAGs

Jon/Alan/Lee/Sara:

See attached for Janet's comments on the DW PAGs proposal. She did not have comments on the FR notice.

Thanks,

Andrea

From: McCoy, Britney
Sent: Wednesday, October 28, 2015 9:18 AM
To: Cherepy, Andrea <Cherepy.Andrea@epa.gov>
Cc: Lee, Raymond <Lee.Raymond@epa.gov>
Subject: Janet comments for PAGs

Good Morning Andrea,

I've attached Janet's comments on PAGs. Please let me know if you need any assistance interpreting her writing. Just give me a call.

Thanks,

Britney

Britney J. McCoy, Ph.D.
Special Assistant

Office of Air and Radiation

Environmental Protection Agency
202-343-9218 (office)

202-604-6231 (cell)

Email: mccoy.britney@epa.gov

To: Christ, Lisa[Christ.Lisa@epa.gov]; DeCair, Sara[DeCair.Sara@epa.gov]
Cc: Perrin, Alan[Perrin.Alan@epa.gov]
From: Veal, Lee
Sent: Wed 10/28/2015 9:50:39 PM
Subject: RE: Janet comments for PAGs

Hi all,

Sara is writing to you as well. She'll have the baton tomorrow.

I think that we can still proceed with getting signature after making the few changes. I don't think that we have to hold pending this resolution, but we are checking in with the front office to be sure. The package still goes to OP right?

Lee

Lee Ann B. Veal

Director, Center for Radiological Emergency Management

Radiation Protection Division

Office of Radiation and Indoor Air

Office: 202-343-9448

Cell: 202-617-4322

www.epa.gov/radiation

From: Christ, Lisa
Sent: Wednesday, October 28, 2015 4:51 PM
To: DeCair, Sara <DeCair.Sara@epa.gov>; Veal, Lee <Veal.Lee@epa.gov>
Cc: Perrin, Alan <Perrin.Alan@epa.gov>
Subject: RE: Janet comments for PAGs

All –

Please see attached. Let me know if it's possible to get Janet's feedback on this approach…

Thanks-

Lisa

From: DeCair, Sara
Sent: Wednesday, October 28, 2015 4:30 PM
To: Veal, Lee <Veal.Lee@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>
Cc: Perrin, Alan <Perrin.Alan@epa.gov>
Subject: RE: Janet comments for PAGs

Lisa and I just chatted about how to be responsive to Janet on item #4 below. A couple thoughts:

Ex. 5 - Deliberative Process

Thank you for advising if we could go back to Janet with this, instead of trying to craft a sentence about the distance between PAGs and day to day regulatory levels. We don't do that with other PAGs.

- Sara

From: Veal, Lee
Sent: Wednesday, October 28, 2015 3:12 PM
To: Christ, Lisa <Christ.Lisa@epa.gov>; DeCair, Sara <DeCair.Sara@epa.gov>
Cc: Perrin, Alan <Perrin.Alan@epa.gov>
Subject: RE: Janet comments for PAGs

Hi all,

We'll need to send a redline back to Janet.

I spoke with the Special Assistant and the Chief of Staff. Ex. 5 - Deliberative Process

Ex. 5 - Deliberative Process

Lee Ann B. Veal

Director, Center for Radiological Emergency Management

Radiation Protection Division

Office of Radiation and Indoor Air

Office: 202-343-9448

Cell: 202-617-4322

www.epa.gov/radiation

From: Christ, Lisa
Sent: Wednesday, October 28, 2015 1:42 PM
To: Veal, Lee <Veal.Lee@epa.gov>; DeCair, Sara <DeCair.Sara@epa.gov>
Cc: Perrin, Alan <Perrin.Alan@epa.gov>
Subject: RE: Janet comments for PAGs

Hi Lee – These look good to me. Ex. 5 - Deliberative Process

Ex. 5 - Deliberative Process

Thanks!

Lisa

From: Veal, Lee
Sent: Wednesday, October 28, 2015 1:15 PM
To: DeCair, Sara <DeCair.Sara@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>
Cc: Perrin, Alan <Perrin.Alan@epa.gov>
Subject: Janet comments for PAGs
Importance: High

Lisa and Sara,

Here are Janet's comments/questions. Some of these are simply questions for her (1, 3, maybe 5) and others are comments to change text (2, 4 6). She will have a separate note sent later today indicating concurrence. I've taken some input from Lisa into the below.

Ex. 5 - Deliberative Process

Ex. 5 - Deliberative Process

Ex. 5 - Deliberative Process

Lee Ann B. Veal

Director, Center for Radiological Emergency Management

Radiation Protection Division

Office of Radiation and Indoor Air

Office: 202-343-9448

Cell: 202-617-4322

www.epa.gov/radiation

From: Cherepy, Andrea
Sent: Wednesday, October 28, 2015 9:30 AM
To: Edwards, Jonathan <Edwards.Jonathan@epa.gov>; Perrin, Alan <Perrin.Alan@epa.gov>; Veal, Lee <Veal.Lee@epa.gov>; DeCair, Sara <DeCair.Sara@epa.gov>
Cc: Flynn, Mike <Flynn.Mike@epa.gov>
Subject: FW: Janet comments for PAGs

Jon/Alan/Lee/Sara:

See attached for Janet's comments on the DW PAGs proposal. She did not have comments on the FR notice.

Thanks,

Andrea

From: McCoy, Britney
Sent: Wednesday, October 28, 2015 9:18 AM
To: Cherepy, Andrea <Cherepy.Andrea@epa.gov>
Cc: Lee, Raymond <Lee.Raymond@epa.gov>
Subject: Janet comments for PAGs

Good Morning Andrea,

I've attached Janet's comments on PAGs. Please let me know if you need any assistance interpreting her writing. Just give me a call.

Thanks,

Britney

Britney J. McCoy, Ph.D.
Special Assistant

Office of Air and Radiation

Environmental Protection Agency
202-343-9218 (office)

202-604-6231 (cell)

Email: mccoy.britney@epa.gov

To: Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]; Christ, Lisa[Christ.Lisa@epa.gov]
From: Ellis, Jerry
Sent: Mon 10/26/2015 12:09:11 PM
Subject: RE: PAGs Package Update

Thanks for the update Sam.

Jerry L. Ellis, Jr.

Environmental Scientist

U.S. Environmental Protection Agency

Standards and Risk Management Division

Office of Ground Water and Drinking Water

1200 Pennsylvania Ave. (4607M), N.W.

Washington, D.C. 20460

Phone: 202-564-2766

From: Hernandez-Quinones, Samuel
Sent: Friday, October 23, 2015 4:00 PM
To: Christ, Lisa
Cc: Ellis, Jerry
Subject: PAGs Package Update

Hi Lisa,

I wanted to tell you about the status of the PAGs Package.

I incorporated all the edits as of Wednesday and provided a clean version to Phil. Phil reviewed the package and returned to me yesterday.

I prepared a Routing slip and left the package on Stephanie Flaharty's Desk, since she was out of the office. My understanding is that she will be back next week and will push the package forward.

If I hear any news I will forward those to you.

Thanks

Sam

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Environmental Protection Agency
Office of Water
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

To: Christ, Lisa[Christ.Lisa@epa.gov]; Veal, Lee[Veal.Lee@epa.gov]; Perrin, Alan[Perrin.Alan@epa.gov]
Cc: Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]; Ellis, Jerry[Ellis.Jerry@epa.gov]; Cherepy, Andrea[Cherepy.Andrea@epa.gov]
From: DeCair, Sara
Sent: Tue 10/20/2015 8:03:37 PM
Subject: Water PAG proposal & FR: OAR's input
Water PAG FR Notice Debbie cmts 10-20-2015.docx
Redline proposal Jon and Debbie input 10-20-2015.docx

Lisa, Sam,

Debbie Jordan (OAR) and Jon Edwards (OAR-ORIA-RPD) provided these few minor but good suggestions on the proposal and FR Notice. I think you all are making final edits before the package goes up to Ken's office, so please include these if you would. If you would send us electronic versions of what you finalize, we can get them to our AA for her review, but we're pretty sure we shouldn't wait on moving the thing forward in your office.

I understand from Lisa that Phil had some input on the Comms Plan, so if you'd share that final version with us too, that'd be great.

Also, we wanted to make sure you heard that the Regs folks suggested this action (the PAG Manual as a whole) be re-tiered as a Tier 3, so that should be corrected in your final Action Memo that goes in the package. I'm glad to help proofread any of the finals before they go up, and I'm in the office til 5:30 pm today and in all day Wednesday and Thursday. Call on me any time.

Sara D. DeCair

http://www.epa.gov/radiation/rert/pags.html

202-343-9108

Room 1416 B in WJC West

To: Christ, Lisa[Christ.Lisa@epa.gov]
Cc: Veal, Lee[Veal.Lee@epa.gov]; Ellis, Jerry[Ellis.Jerry@epa.gov]; Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]; Perrin, Alan[Perrin.Alan@epa.gov]
From: DeCair, Sara
Sent: Tue 10/20/2015 7:30:53 PM
Subject: RE: OAR AA-level review: PAGs Manual

I think the tweaks from Debbie, Jon and Phil are good to have us go up with the package this week. I'll get you a redline ASAP of the proposal and FR. The ones I just sent over only had Debbie's input so I am busy combining. Please note that we just learned that Janet McCabe would like to review it really quickly this week, too. We can email her the finals when we're done with this round. Thx!

From: Christ, Lisa
Sent: Tuesday, October 20, 2015 3:22 PM
To: DeCair, Sara
Cc: Veal, Lee; Ellis, Jerry; Hernandez-Quinones, Samuel
Subject: Re: OAR AA-level review: PAGs Manual

Sara,

We are putting the package together for Ken's signature. There were some comments from Phil on the comm materials that are being incorporated. We will incorporate the edits you provided. I need to give final versions to Ken so we need to confirm we are done making revisions. Let me know if you think we all need a last look before this goes to Ken.

Lisa

Sent from my iPhone

On Oct 20, 2015, at 12:29 PM, DeCair, Sara <DeCair.Sara@epa.gov> wrote:

Lisa,

Very minor edits and one question from Janet McCabe's office (attached), and I have a couple good tweaks from Jon Edwards as well. I can put them together in one redline version to get to you today. Have you heard from your leadership? Call me if you'd like to plan the next steps. I'm at my desk most of this afternoon.

We heard Eric's heartbreaking news, too. Terrible.

Sara

From: Perrin, Alan
Sent: Tuesday, October 20, 2015 11:36 AM
To: DeCair, Sara
Subject: FW: PAGs Manual

All looks fairly straightforward? Note on page 6 of FR there is another "…Protective Actions Guides…" – should change to …Protective Action Guides….

Alan Perrin, Deputy Director
Radiation Protection Division, USEPA
ofc (202) 343-9775 | mbl (202) 279-0376

From: Cherepy, Andrea
Sent: Monday, October 19, 2015 9:52 AM
To: Edwards, Jonathan; Perrin, Alan; Veal, Lee; DeCair, Sara
Cc: Flynn, Mike
Subject: FW: PAGs Manual

All,

Please see attached comments from Debbie on the FR notice and draft DW PAG.

Andrea

From: Jordan, Deborah

Sent: Sunday, October 18, 2015 9:49 PM
To: Cherepy, Andrea
Cc: Flynn, Mike
Subject: RE: PAGs Manual

Please find a few minor comments on the FR and the PAG manual. Thanks for the opportunity to review.

Debbie

From: Cherepy, Andrea
Sent: Tuesday, October 13, 2015 9:05 AM
To: Jordan, Deborah <Jordan.Deborah@epa.gov>
Cc: Flynn, Mike <Flynn.Mike@epa.gov>
Subject: RE: PAGs Manual

Debbie,

The attached files are meant to supplement the PAGS notebook that you received this morning. These files show the progression of edits (in redline) from our interactions with OSWER, plus their comment sets for us. Please let us know if you have any questions.

Andrea

Andrea Cherepy | Chief of Staff | Office of Radiation & Indoor Air | U.S. Environmental Protection Agency | Tel 202 343 9317 | cherepy.andrea@epa.gov

<PAGs FR Notice drinking water PAG 10-2-2015 dj.docx>

<PAGS Redline proposal with 4 changes 10-2-2015 dj.docx>

To: Ellis, Jerry[Ellis.Jerry@epa.gov]
Cc: Christ, Lisa[Christ.Lisa@epa.gov]
From: Hernandez-Quinones, Samuel
Sent: Tue 10/13/2015 4:35:00 PM
Subject: Re: Package

Hi Jerry,

Let me know if you have any updates regarding the status of the PAGs Package review.

Thank You

Sam

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Environmental Protection Agency
Office of Water
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Ellis, Jerry
Sent: Friday, October 9, 2015 1:53 PM
To: Hernandez-Quinones, Samuel
Subject: Package

Hey Sam,

Did you get the FRN package ready for Eric?

Jerry L. Ellis, Jr.

Environmental Scientist

U.S. Environmental Protection Agency

Standards and Risk Management Division

Office of Ground Water and Drinking Water

1200 Pennsylvania Ave. (4607M), N.W.

Washington, D.C. 20460

Phone: 202-564-2766

To: Veal, Lee[Veal.Lee@epa.gov]
Cc: Christ, Lisa[Christ.Lisa@epa.gov]; Ellis, Jerry[Ellis.Jerry@epa.gov]
From: Hernandez-Quinones, Samuel
Sent: Fri 10/9/2015 7:02:21 PM
Subject: RE: Mike's comments

HI Lee,

I completed all the revision on the share point site.

Feel free to use those files for your package.

Sam

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Environmental Protection Agency
Office of Water
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Veal, Lee
Sent: Friday, October 09, 2015 12:33 PM
To: Hernandez-Quinones, Samuel
Cc: Ellis, Jerry; DeCair, Sara; Christ, Lisa; Perrin, Alan; Edwards, Jonathan
Subject: Mike's comments

Dear Sam,

Mike Flynn has completed his review of the package, and has some edits for the package. He is prepared to take a final package to Janet McCabe today, so when you have final documents, please advise and I'll make a hard copy package. I am in today in EPA west if you need me.

Ex. 5 - Deliberative Process

Ex. 5 - Deliberative Process

THANK YOU SO MUCH!

Lee

Lee Ann B. Veal

Director, Center for Radiological Emergency Management

Radiation Protection Division

Office of Radiation and Indoor Air

Office: 202-343-9448

Cell: 202-617-4322

www.epa.gov/radiation

To: Christ, Lisa[Christ.Lisa@epa.gov]
From: Burneson, Eric
Sent: Fri 10/9/2015 1:46:32 PM
Subject: RE: FYI -- Revised drinking water PAG proposal for Peter and Mikes' review

It does not appear as though Steph Flaharty was involved in any of the reviews of this package, and she is now out of the office until Thursday. Had you worked out a plan for getting the package up to OW without Steph?

From: Christ, Lisa
Sent: Thursday, October 08, 2015 5:16 PM
To: Burneson, Eric
Subject: FYI -- Revised drinking water PAG proposal for Peter and Mikes' review

Eric-

We've cleared OSWER review and are preparing the proposal for Ken and Janet's review before send ing to OP for transmittal to OMB.

Sam is presenting at the PR workshop next week but can be reached by email, Jerry is in and I'm reachable Ex. 6 - Personal Privacy if revisions are needed. We'll continue coordinating with ORIA on this. I've left a hard copy for you and also for Peter.

Lisa

From: Christ, Lisa
Sent: Wednesday, October 07, 2015 4:30 PM
To: Grevatt, Peter
Cc: Burneson, Eric; Hernandez-Quinones, Samuel; Ellis, Jerry
Subject: FW: OSWER Comments on 10-02-2015 Revisions to DW PAG and FR NODA

Hi Peter,

Sara, Lee and I have agreed with the revisions in the attached proposal and summarized below. Alan and Jon are reviewing as well. Please let me know if there are any other changes you would like.

In addition, we are taking a last look at the communication materials that will be needed to transmit the package to OP for OMB review. Our goal is to have the complete package ready to go to Ken and Janet on Friday for review/transmittal to OP.

Let me know if you have any questions or concerns-

Lisa

From: Christ, Lisa
Sent: Wednesday, October 07, 2015 2:11 PM
To: DeCair, Sara; Veal, Lee
Subject: FW: OSWER Comments on 10-02-2015 Revisions to DW PAG and FR NODA

I've taken the first crack at updating the proposal. See below and attached.

We can talk at 4pm

From: Grevatt, Peter
Sent: Wednesday, October 07, 2015 12:57 PM
To: Flynn, Mike; DeCair, Sara; Christ, Lisa
Cc: Oshida, Phil; Edwards, Jonathan
Subject: RE: OSWER Comments on 10-02-2015 Revisions to DW PAG and FR NODA

Thanks Mike. Lisa and Sara, I wonder whether you can take a quick look at the suggestions that Mike and I have provided below. If there are minor additional changes we can make that would be helpful, I recommend that we do so, but none of the issues identified prevent us from going forward to the next step in our process and I recommend that we do so asap. Thanks again for all of your great work on this!

From: Flynn, Mike
Sent: Wednesday, October 07, 2015 12:49 PM

To: Grevatt, Peter
Subject: Re: OSWER Comments on 10-02-2015 Revisions to DW PAG and FR NODA

On travel....here's quick reaction -

Ex. 5 - Deliberative Process

Mike

Sent from my iPhone

On Oct 7, 2015, at 11:26 AM, Grevatt, Peter <Grevatt.Peter@epa.gov> wrote:

Regarding OSWER's 3 bullets:

Ex. 5 - Deliberative Process

Ex. 5 - Deliberative Process

Please let me know what you think.

From: Hostage, Barbara
Sent: Wednesday, October 07, 2015 11:00 AM
To: Grevatt, Peter; Flynn, Mike
Cc: Woolford, James; Cheatham, Reggie; Tulis, Dana
Subject: OSWER Comments on 10-02-2015 Revisions to DW PAG and FR NODA
Importance: High

Good morning, Peter & Mike.

Ex. 5 - Deliberative Process

Ex. 5 - Deliberative Process

Thank you again for the opportunity to participate in the development of these important Significant Guidance Documents. We look forward to continue a close working relationship with you as you move forward.

Barbara Hostage, Director

Policy Analysis and Regulatory Management Staff (PARMS)
Office of Program Management (OPM)
Office of Solid Waste and Emergency Response (OSWER)

EPA West Room 4130A
Phone Number: 202-566-1933

Fax Number: 202-566-1934
Mail Code: 5103T

To: Christ, Lisa[Christ.Lisa@epa.gov]
Cc: Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]
From: Ellis, Jerry
Sent: Thur 10/8/2015 7:48:14 PM
Subject: RE: Transmittal memos
OW Reg Memo Guidance 7-07-15.docx

I've left messages for Steph F. but I believe this is the most recent guidance on memos from OW.

Jerry L. Ellis, Jr.

Environmental Scientist

U.S. Environmental Protection Agency

Standards and Risk Management Division

Office of Ground Water and Drinking Water

1200 Pennsylvania Ave. (4607M), N.W.

Washington, D.C. 20460

Phone: 202-564-2766

From: Ellis, Jerry
Sent: Thursday, October 08, 2015 3:35 PM
To: Christ, Lisa
Cc: Hernandez-Quinones, Samuel
Subject: RE: Transmittal memos

Hi Lisa and Sam:

Please review and provide any comments/changes. Thanks.

Jerry L. Ellis, Jr.

Environmental Scientist

U.S. Environmental Protection Agency

Standards and Risk Management Division

Office of Ground Water and Drinking Water

1200 Pennsylvania Ave. (4607M), N.W.

Washington, D.C. 20460

Phone: 202-564-2766

From: Christ, Lisa
Sent: Thursday, October 08, 2015 8:19 AM
To: Ellis, Jerry
Cc: Hernandez-Quinones, Samuel
Subject: FW: Example transmittal memos

Hi Jerry –

Please prepare draft memos for the drinking water PAG. Examples are attached. The FRN and transmittal memo should be from Peter to Ken. Please check in with Stephanie to see if the "template" or format has changed. We're hoping to get the full package to Peter for review tomorrow and to the AAs, Ken and Janet, next week. Sorry for the quick turnaround after we've been in hold mode so long…

Lisa

From: DeCair, Sara
Sent: Wednesday, October 07, 2015 5:07 PM
To: Christ, Lisa
Cc: Veal, Lee
Subject: Example transmittal memos

Lisa,

I have a few examples in my old FR files here. I hope they are useful! Even though the package is not really headed for the FR at this time, the draft memos are needed as if it is.

Sara

Sara D. DeCair

http://www.epa.gov/radiation/rert/pags.html

202-343-9108

Room 1416 B in WJC West

To: Lee, Raymond[Lee.Raymond@epa.gov]; Edwards, Jonathan[Edwards.Jonathan@epa.gov]; Christ, Lisa[Christ.Lisa@epa.gov]; DeCair, Sara[DeCair.Sara@epa.gov]; Veal, Lee[Veal.Lee@epa.gov]
From: Perrin, Alan
Sent: Thur 10/8/2015 1:18:04 PM
Subject: RE: Uptier Request for SAN 5198

Ray, hold off for right now; we are digging a bit on this. I have calls in to Wanda and Tom, but have not connected directly. Thx, Alan

Alan Perrin, Deputy Director
Radiation Protection Division, USEPA
ofc (202) 343-9775 | mbl (202) 279-0376

From: Lee, Raymond
Sent: Thursday, October 08, 2015 9:16 AM
To: Edwards, Jonathan; Christ, Lisa; DeCair, Sara; Perrin, Alan; Veal, Lee
Subject: RE: Uptier Request for SAN 5198
Importance: High

Hi everyone,

Ex. 6 - Personal Privacy

Ex. 5 - Deliberative Process

Ex. 5 - Deliberative Process

Thanks,

Ray

Ray Lee | Center for Radiation Information and Outreach (CRIO) | US EPA | Phone 202.343.9463 | Fax 202.343.2305 | lee.raymond@

From: Edwards, Jonathan
Sent: Wednesday, October 07, 2015 5:55 PM
To: Christ, Lisa; DeCair, Sara; Perrin, Alan; Veal, Lee
Cc: Lee, Raymond
Subject: RE: Uptier Request for SAN 5198

Ex. 5 - Deliberative Process

From: Christ, Lisa
Sent: Wednesday, October 07, 2015 5:12 PM
To: DeCair, Sara; Perrin, Alan; Edwards, Jonathan; Veal, Lee
Cc: Lee, Raymond
Subject: RE: Uptier Request for SAN 5198

Ex. 5 - Deliberative Process

From: DeCair, Sara
Sent: Wednesday, October 07, 2015 5:04 PM
To: Perrin, Alan; Edwards, Jonathan; Veal, Lee; Christ, Lisa
Cc: Lee, Raymond
Subject: FW: Uptier Request for SAN 5198

I'm not sure what this is.

From: Farrar, Wanda
Sent: Wednesday, October 07, 2015 4:51 PM
To: DeCair, Sara; Lee, Raymond
Cc: Eagles, Tom
Subject: Uptier Request for SAN 5198

Good Day Sara and Ray,

Ex. 5 - Deliberative Process

Thanks,

Wanda

From the desk of:

Wanda Farrar

To: Christ, Lisa[Christ.Lisa@epa.gov]
Cc: Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]
From: Ellis, Jerry
Sent: Thur 10/8/2015 1:05:11 PM
Subject: RE: Example transmittal memos

Sounds great and I am happy that things are moving along.

Jerry L. Ellis, Jr.

Environmental Scientist

U.S. Environmental Protection Agency

Standards and Risk Management Division

Office of Ground Water and Drinking Water

1200 Pennsylvania Ave. (4607M), N.W.

Washington, D.C. 20460

Phone: 202-564-2766

From: Christ, Lisa
Sent: Thursday, October 08, 2015 8:19 AM
To: Ellis, Jerry
Cc: Hernandez-Quinones, Samuel
Subject: FW: Example transmittal memos

Hi Jerry –

Please prepare draft memos for the drinking water PAG. Examples are attached. The FRN and transmittal memo should be from Peter to Ken. Please check in with Stephanie to see if the "template" or format has changed. We're hoping to get the full package to Peter for review tomorrow and to the AAs, Ken and Janet, next week. Sorry for the quick turnaround after we've been in hold mode so long…

Lisa

From: DeCair, Sara
Sent: Wednesday, October 07, 2015 5:07 PM
To: Christ, Lisa
Cc: Veal, Lee
Subject: Example transmittal memos

Lisa,

I have a few examples in my old FR files here. I hope they are useful! Even though the package is not really headed for the FR at this time, the draft memos are needed as if it is.

Sara

Sara D. DeCair

http://www.epa.gov/radiation/rert/pags.html

202-343-9108

Room 1416 B in WJC West

To: DeCair, Sara[DeCair.Sara@epa.gov]; Christ, Lisa[Christ.Lisa@epa.gov]
From: Veal, Lee
Sent: Wed 10/7/2015 7:24:07 PM
Subject: RE: Checklist for FR pkg, and calls I've made

Ex. 5 - Deliberative Process

Lee Ann B. Veal

Director, Center for Radiological Emergency Management

Radiation Protection Division

Office of Radiation and Indoor Air

Office: 202-343-9448

Cell: 202-617-4322

www.epa.gov/radiation

From: DeCair, Sara
Sent: Wednesday, October 07, 2015 2:24 PM
To: Christ, Lisa; Veal, Lee
Subject: Checklist for FR pkg, and calls I've made

Ladies,

The checklist I'm using for submitting the FR Package to OP is attached. The Guidance column lists a bunch of things that we don't have yet (FR transmittal letter, typesetting request, etc.) but I've left Glynis Hill (OP) a voice mail asking if she needs those things to start her review or not. I think she is much more interested in the content, the communications material, and the comments we got and resolved.

Ex. 5 - Deliberative Process

S.

Sara D. DeCair

http://www.epa.gov/radiation/rert/pags.html

202-343-9108

Room 1416 B in WJC West

To: Flynn, Mike[Flynn.Mike@epa.gov]; DeCair, Sara[DeCair.Sara@epa.gov]; Christ, Lisa[Christ.Lisa@epa.gov]
Cc: Oshida, Phil[Oshida.Phil@epa.gov]; Edwards, Jonathan[Edwards.Jonathan@epa.gov]
From: Grevatt, Peter
Sent: Wed 10/7/2015 4:57:22 PM
Subject: RE: OSWER Comments on 10-02-2015 Revisions to DW PAG and FR NODA

Thanks Mike. Lisa and Sara, I wonder whether you can take a quick look at the suggestions that Mike and I have provided below. If there are minor additional changes we can make that would be helpful, I recommend that we do so, but none of the issues identified prevent us from going forward to the next step in our process and I recommend that we do so asap. Thanks again for all of your great work on this!

From: Flynn, Mike
Sent: Wednesday, October 07, 2015 12:49 PM
To: Grevatt, Peter
Subject: Re: OSWER Comments on 10-02-2015 Revisions to DW PAG and FR NODA

On travel....here's quick reaction -

Ex. 5 - Deliberative Process

Suggest we have our folks quickly look at.

Mike

Sent from my iPhone

On Oct 7, 2015, at 11:26 AM, Grevatt, Peter <Grevatt.Peter@epa.gov> wrote:

Regarding OSWER's 3 bullets:

Ex. 5 - Deliberative Process

Please let me know what you think.

From: Hostage, Barbara
Sent: Wednesday, October 07, 2015 11:00 AM
To: Grevatt, Peter; Flynn, Mike
Cc: Woolford, James; Cheatham, Reggie; Tulis, Dana
Subject: OSWER Comments on 10-02-2015 Revisions to DW PAG and FR NODA
Importance: High

Good morning, Peter & Mike.

Ex. 5 - Deliberative Process

Ex. 5 - Deliberative Process

Ex. 5 - Deliberative Process

Thank you again for the opportunity to participate in the development of these

important Significant Guidance Documents. We look forward to continue a close working relationship with you as you move forward.

Barbara Hostage, Director

Policy Analysis and Regulatory Management Staff (PARMS)
Office of Program Management (OPM)
Office of Solid Waste and Emergency Response (OSWER)

EPA West Room 4130A
Phone Number: 202-566-1933
Fax Number: 202-566-1934
Mail Code: 5103T

To: Christ, Lisa[Christ.Lisa@epa.gov]
From: Perrin, Alan
Sent: Fri 10/2/2015 8:47:46 PM
Subject: RE: Edited drinking water PAG documents

Thanks Lisa.

Alan Perrin, Deputy Director
Radiation Protection Division, USEPA
ofc (202) 343-9775 | mbl (202) 279-0376

From: Christ, Lisa
Sent: Friday, October 02, 2015 4:39 PM
To: Grevatt, Peter; DeCair, Sara; Flynn, Mike; Perrin, Alan
Cc: Veal, Lee
Subject: RE: Edited drinking water PAG documents

Ex. 5 - Deliberative Process

From: Grevatt, Peter
Sent: Friday, October 02, 2015 4:31 PM
To: DeCair, Sara; Flynn, Mike; Perrin, Alan; Christ, Lisa
Cc: Veal, Lee
Subject: RE: Edited drinking water PAG documents

Ex. 5 - Deliberative Process

From: DeCair, Sara
Sent: Friday, October 02, 2015 4:14 PM
To: Flynn, Mike; Grevatt, Peter; Perrin, Alan; Christ, Lisa
Cc: Veal, Lee
Subject: Edited drinking water PAG documents

Mike and Peter,

We took out the sentence below that we heard maybe should be cut -- or maybe should be kept. We think it'd be easier to cut it but if not, it should have a few edits for better clarity. If you want it back in, just let me know. See what you think of the four attachments for sending to OSWER. Thank you!

Ex. 5 - Deliberative Process

Sara D. DeCair

http://www.epa.gov/radiation/rert/pags.html

202-343-9108

Room 1416 B in WJC West

To: Perrin, Alan[Perrin.Alan@epa.gov]; Christ, Lisa[Christ.Lisa@epa.gov]
From: DeCair, Sara
Sent: Fri 10/2/2015 6:20:04 PM
Subject: 3 edited docs for ODs then OSWER
Redline proposal with 4 changes 10-2-2015.docx
FR Notice drinking water PAG 10-2-2015.docx
Timeline for PAG Manual 10-2-2015.docx

Lisa,

Alan already looked at these and I think (hope!) they do what the ODs wanted from us. I'm glad to send them up now if you think that's helpful, or we can wait til we've had a chance to review each other's documents and put all four things together in one message. Up to you,

Sara

Sara D. DeCair

http://www.epa.gov/radiation/rert/pags.html

202-343-9108

Room 1416 B in WJC West

To: Grevatt, Peter[Grevatt.Peter@epa.gov]; Flynn, Mike[Flynn.Mike@epa.gov]; Christ, Lisa[Christ.Lisa@epa.gov]; Perrin, Alan[Perrin.Alan@epa.gov]
From: DeCair, Sara
Sent: Fri 10/2/2015 1:19:26 PM
Subject: PAGs docs for 11 am
Redline 4 more OSWER changes 10-1-2015.docx
OGWDW-ORIA response to OSWER comments 10-1-2015.docx
Next Steps for PAG Manual 10-1-2015.docx
FR Notice drinking water PAG 9-24-2015.docx

Good morning, here are the documents for our 11 am meeting. See you then,

Sara

Sara D. DeCair

http://www.epa.gov/radiation/rert/pags.html

202-343-9108

Room 1416 B in WJC West

To: DeCair, Sara[DeCair.Sara@epa.gov]; Veal, Lee[Veal.Lee@epa.gov]; Christ, Lisa[Christ.Lisa@epa.gov]
From: Perrin, Alan
Sent: Thur 10/1/2015 9:22:59 PM
Subject: RE: Updated docs for ODs tomorrow

Sara, I think these look fine for the meeting tomorrow morning. I see a few edits, but nothing that can't wait until we have Peter/Mike's changes. I think they may want some water-food tweaks (I have a suggestion there) and they may want a more explicit statement around implementability in the FR (which I think can be done with a couple word addition to the current line). See you in the morning, Alan

Alan Perrin, Deputy Director
Radiation Protection Division, USEPA
ofc (202) 343-9775 | mbl (202) 279-0376

From: DeCair, Sara
Sent: Thursday, October 01, 2015 4:43 PM
To: Veal, Lee; Perrin, Alan; Christ, Lisa
Subject: Updated docs for ODs tomorrow

Will you take a look and see if you see any snags? I'll wait til the morning to print copies for our 11 am with Mike and Peter. If you think they look good enough, you might want to send these up sooner. I did hear Mike saying that he might have a little more of something to suggest for the FR Notice…

Thanks!!

Sara D. DeCair

http://www.epa.gov/radiation/rert/pags.html

202-343-9108

Room 1416 B in WJC West

To: Veal, Lee[Veal.Lee@epa.gov]; Perrin, Alan[Perrin.Alan@epa.gov]; Edwards, Jonathan[Edwards.Jonathan@epa.gov]; Christ, Lisa[Christ.Lisa@epa.gov]; Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]
From: DeCair, Sara
Sent: Mon 9/28/2015 4:31:00 PM
Subject: Updated docs for drinking water PAG proposal
OGWDW-ORIA response to OSWER comments 9-28-2015.docx
Redline 3 more OSWER changes 9-28-2015.docx
Internal Q&A on Water PAG 9-28-2015.docx
Internal Q&A on Water PAG 9-28-2015.docx

All;

Per our conversations on Wednesday and Thursday, here are some updated documents. Lisa did a great job reworking the Response to Comments, and there are now highlights in red where more OD-level discussion is needed. (You will have seen a meeting invitation for Thursday, I think.) I just moved the response to #6 around and accepted all the changes.

Then we had comms staff help on the Food-water relationship language, and you'll see that in a new Redline version of the proposal, attached, that makes a total of 3 changes per OSWER's latest input. We're looking for feedback on that food-water language.

Then the Internal Q&A and FR Notice have only very small edits, based on what we discussed. I'll be updating the Project Plan to keep track of revision dates. Thank you to everyone for looking at these!

Sara

To: Christ, Lisa[Christ.Lisa@epa.gov]; Veal, Lee[Veal.Lee@epa.gov]
From: DeCair, Sara
Sent: Thur 9/24/2015 7:31:25 PM
Subject: FR Notice slightly updated
FR Notice drinking water PAG 9-24-2015.docx

See pages 5, 6 and 8 in particular if you would. I added just a couple words about communicating with the public in the charge questions on Page 8, which had already asked about implementation and additional guidance input. I think the legal disclaimer on page 5 and only mentioning cumulative risk on page 6 is about right -- but I'm open to adding a little more if you think it'd help!

Jessica and Tony have been helping me with the Food-water language and I've provided Alan a copy to think about since he heard Mike's concerns, twice in fact. It is very easy to get the wording even more confusing but we'll have to see if we can talk through it with ODs next week.

More to come,

Sara

To: Christ, Lisa[Christ.Lisa@epa.gov]
From: Hernandez-Quinones, Samuel
Sent: Thur 9/24/2015 12:32:44 PM
Subject: Re: PAG comment responses

Hi Lisa,

I am available all day. let me know what time works best for you.

Sam

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Environmental Protection Agency
Office of Water
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Christ, Lisa
Sent: Thursday, September 24, 2015 8:23 AM
To: Veal, Lee; DeCair, Sara
Cc: Hernandez-Quinones, Samuel
Subject: RE: PAG comment responses

Hi All –

Let's talk this morning, if possible, about how to tackle the re-writes. I'll take a crack at summarizing the feedback from yesterday. My Outlook calendar is up to date and I'm not too busy today. It looks like y'all may have an all-day meeting/activity?

Lisa

From: Veal, Lee
Sent: Wednesday, September 23, 2015 5:24 PM
To: Christ, Lisa

Cc: DeCair, Sara; Hernandez-Quinones, Samuel
Subject: Re: PAG comment responses

Hi

Based on today's call, would you like for us to take the pen, or do you guys want to? We are flexible. Sara will work on the FDA language either way.

Lee

Lee Ann B Veal

Director, Center for Radiological Emergency Management

Office of Radiation and Indoor Air

USEPA

Office 202-343-9448

Cell 202-617-4322

On Sep 22, 2015, at 4:06 PM, Christ, Lisa <Christ.Lisa@epa.gov> wrote:

Revised version attached – let me know what you think…

TY-

Lisa

From: DeCair, Sara
Sent: Monday, September 21, 2015 1:52 PM
To: Christ, Lisa; Veal, Lee
Subject: PAG comment responses

Lisa,

I like all Alan's suggestions and am attaching a clean copy. I also think this redline version of the chapter, attached, properly addresses the three items we decided on – see if you

think it looks okay? We have a few options on legal disclaimers, and several good points about food and water and we can choose any subset you like. Many thanks!

Sara

From: Perrin, Alan
Sent: Friday, September 18, 2015 6:57 PM
To: DeCair, Sara; Christ, Lisa
Cc: Edwards, Jonathan
Subject: RE: Next to Alan: Responses

You two did a great job on this. Both Jon and I had a chance to look at it this afternoon. The attached includes some additional formatting (mostly to add a bit of OW blue to the sheet along with some white space) – I just accepted those changes to keep track changes manageable. It also includes some text additions (available in track changes), especially to the Q on cumulative risk. Please take a look and decide what will work for the Wednesday ODs briefing. Thanks again for your hard work! -Alan

~~~~~~~~~~~~~
Alan Perrin, Deputy Director
Radiation Protection Division, USEPA
ofc (202) 343-9775 | mbl (202) 279-0376

From: DeCair, Sara
Sent: Thursday, September 17, 2015 5:00 PM
To: Christ, Lisa; Perrin, Alan
Subject: Next to Alan: Responses

Lisa, I incorporated all your suggestions and Alan says he would like to provide a little formatting help tomorrow (as well as go over what we've done). This will be perfect material for our meeting next Wednesday, and I offered to do a redline with the three changes we agreed we should make. I can get that done Monday and share it with you. Thank you again for being so helpful in getting through this very wearying process!

Sara

Sara D. DeCair
~~~~~~~~~~~~~

http://www.epa.gov/radiation/rert/pags.html

202-343-9108

Room 1416 B in WJC West

<OGWDW-ORIA response to OSWER comments 9-18-2015_LC.docx>

To: Flynn, Mike[Flynn.Mike@epa.gov]; Edwards, Jonathan[Edwards.Jonathan@epa.gov]; Perrin, Alan[Perrin.Alan@epa.gov]; Veal, Lee[Veal.Lee@epa.gov]; Cherepy, Andrea[Cherepy.Andrea@epa.gov]; Cheng, Deborah[Cheng.Deborah@epa.gov]
Cc: Christ, Lisa[Christ.Lisa@epa.gov]
From: DeCair, Sara
Sent: Tue 9/22/2015 9:05:06 PM
Subject: Updated response to OSWER cmts & same draft redline water PAG proposal
OGWDW-ORIA response to OSWER comments 9-22-2015.docx
Redline Water Protective Action Guide 9-21-2015.docx

Mike,

Lisa Christ, Sam Hernandez, Lee and I spoke this afternoon and went through each of the responses to make sure we were as positive as possible about each and every comment. We have edited language, an additional possible compromise and a couple areas where we need yours and Peter's input in particular.

The attached responses and redline version of the water PAG proposal make up the materials for tomorrow's conference call with OGWDW at 4 pm. Do let me know if you need anything else.

Sara

To: Christ, Lisa[Christ.Lisa@epa.gov]
From: DeCair, Sara
Sent: Thur 9/17/2015 2:52:41 PM
Subject: New draft responses, plus Lee's previous summaries
8-19-2015 OSWER overarching comments on draft water PAG_with OW_OAR responses.docx
8-19-2015 Status update on internal review of Drinking Water PAG draft August 2015.docx
draft response to OSWER Overarching comments 9-17-2015.docx

Lisa,

I included the summary responses that Lee sent over on August 19 for perspective. She is very good at diplomatic writing. In my draft responses, you'll see a couple items in italics that I think we might need to do. Please edit the heck out of these responses as you see fit! I tried to include more than is really needed.

Thanks so much,

Sara

Sara D. DeCair

http://www.epa.gov/radiation/rert/pags.html

202-343-9108

Room 1416 B in WJC West

To: DeCair, Sara[DeCair.Sara@epa.gov]
Cc: Veal, Lee[Veal.Lee@epa.gov]; Perrin, Alan[Perrin.Alan@epa.gov]; Christ, Lisa[Christ.Lisa@epa.gov]
From: Edwards, Jonathan
Sent: Tue 9/15/2015 9:20:06 PM
Subject: RE: Briefing mat'ls for Janet re: drinking water PAG

FYI---Before Mike sent this up to AA-level, in the NEXT STEPS / TIMELINE document, he dropped off the last block under "expedited" so that both sections (drinking water PAG, and full PAG manual) end with arrival at OMB and it clearly shows one is August and the other is June. --Jon

From: DeCair, Sara
Sent: Tuesday, September 15, 2015 4:49 PM
To: Cherepy, Andrea
Cc: Veal, Lee; Perrin, Alan; Edwards, Jonathan; Christ, Lisa
Subject: Briefing mat'ls for Janet re: drinking water PAG

Andrea,

The file names should be self-explanatory, I think. We'd recommend the focus for our meeting time tomorrow be the Next Steps document, while the PAGs 101 and Water PAG background can be reading for before or afterward. Thank you for sending these up, I appreciate it.

Sara

Sara D. DeCair

http://www.epa.gov/radiation/rert/pags.html

202-343-9108

Room 1416 B in WJC West

To: Christ, Lisa[Christ.Lisa@epa.gov]; Perrin, Alan[Perrin.Alan@epa.gov]; Veal, Lee[Veal.Lee@epa.gov]
From: DeCair, Sara
Sent: Fri 9/4/2015 6:30:20 PM
Subject: FR Notice & plan for next week
Water PAG FR Notice draft 9-4-2015.docx
RP_AP-BR1-8_PAG-Manual_(DeCair) 9-4-2015.docx
Federal Register Checklist_04292014.docx

Lisa,

I incorporated most of your suggestions and have the cumulative risk issue worded according to Jessica's wise input. That is a new topic for us and we are bracing ourselves for the reaction.

For next week when I'm on travel, Lee and Alan will have access to the full FR package set of documents on our share drive, and if things need to be edited, I'm sure you all can figure out who should do what. The attached updated Project Plan lists each of the documents and their revision dates. Note that I rearranged some of the file names but worked from all the most recent ones we have shared, so don't worry -- the content wasn't changed -- it was just to make sure the folder makes sense.

Lastly, I've attached a checklist we use for FR packages. There are a number of transmittal memos and forms and letters that will probably need to come from your office but we can work on them in the next couple weeks together. I'm glad to help and I have examples handy from the 2013 PAG Manual FR package.

Have a great weekend!

Sara D. DeCair

http://www.epa.gov/radiation/rert/pags.html

202-343-9108

Room 1416 B in WJC West

To: Christ, Lisa[Christ.Lisa@epa.gov]
From: DeCair, Sara
Sent: Thur 9/3/2015 3:28:54 PM
Subject: FYI note from 8/27: OSWER Review of Drinking Water PAG
Water PAG FR Notice draft 9-3-2015.docx

Lisa,

Ex. 5 - Deliberative Process

Alan didn't have anything further on this FR so I think it's for your eyes next. I switched the point of contact to you, but would be glad to have it be me, or both of us.

If we hear anything from OSWER today, I'll touch base (but I'd be a bit surprised). Cheers,

Sara

202-343-9108

From: Hostage, Barbara
Sent: Thursday, August 27, 2015 9:29 AM
To: Tulis, Dana; Cheatham, Reggie; Woolford, James; Stalcup, Dana; Scozzafava, MichaelE; Fitz-James, Schatzi; Kudarauskas, Paul; Raffaele, Kathleen; Foster, Stiven; Cogliano, Gerain
Subject: FW: OSWER Review of Drinking Water PAG
Importance: High

fyi

From: Hostage, Barbara
Sent: Thursday, August 27, 2015 9:14 AM
To: Flynn, Mike
Cc: Grevatt, Peter
Subject: OSWER Review of Drinking Water PAG
Importance: High

Good morning, Mike.

I was just drafting this email message to you when I received your email this morning.

It was very nice seeing/speaking with you and Peter on Monday.

We look forward to seeing the redline/strikeout version of the revised draft.

We will also provide our comments on the draft Q& A document that Sara Decair shared with us on Monday afternoon.

Finally, we would like to request to review/comment on the FR notice which will announce the Draft DW PAG for review/comment.

Ex. 5 - Deliberative Process

It is my hope that we can use the time before Dana returns to answer any

questions/resolve any further concerns we (OSWER) may have.

I want to thank you and your staff for the time and consideration in addressing OSWER concerns.

Please let me know if you have any questions.

Barbara Hostage, Director

Policy Analysis and Regulatory Management Staff (PARMS)
Office of Program Management (OPM)
Office of Solid Waste and Emergency Response (OSWER)

EPA West Room 4130A
Phone Number: 202-566-1933
Fax Number: 202-566-1934
Mail Code: 5103T

To: Hostage, Barbara[Hostage.Barbara@epa.gov]
Cc: Grevatt, Peter[Grevatt.Peter@epa.gov]; Edwards, Jonathan[Edwards.Jonathan@epa.gov]; Christ, Lisa[Christ.Lisa@epa.gov]; Perrin, Alan[Perrin.Alan@epa.gov]
From: Flynn, Mike
Sent: Fri 8/28/2015 3:03:20 AM
Subject: Drinking Water PAG redline
Draft drinking water Protective Action Guide redline 8-27-2015.docx

---

Barbara,

Attached please find a redline/strikeout version of the drinking water PAG proposal. OW and we have incorporated OSWER's suggestions and made a few other clarifications based on discussion with staff and branch chiefs. We request that you focus on showstopper issues, and would appreciate your comments by next Thursday, Sept 3rd.

Sorry I didn't connect with you today by phone. Peter or I will be in touch to discuss your latest email and the path forward. We recognize the other priorities OSWER is dealing with, and greatly appreciate your efforts in helping us keep this moving as quickly as possible.

Thanks,

Mike

To: Christ, Lisa[Christ.Lisa@epa.gov]
From: Hernandez-Quinones, Samuel
Sent: Thur 8/27/2015 6:43:05 AM
Subject: Question on Edited File
Clean Version 8-26-15 Edits Draft Protective Action Guide.docx
Compared Document.docx

Hi Lisa,

I noticed that the file that you sent earlier today had some language that I had suggested we remove. Specifically the following from section 7:

Ex. 5 - Deliberative Process

Also I noticed that I had made some small edits in section 7 that were not captured in the file you sent to Sara. Nothing major but in order to keep consistency and version control I would recommend we use attached file to share with office of air. It is a clean version that essentially includes the edits you provided in addition to sara's and my edits in response to OSWER comments.

I think the only open item is my initial question about the "redundant language", if you agree that it be removed then the attached files would be the correct version. Here you will see the clean version and then a compared version in which you can see the changes from the file you sent earlier today.

Ex. 5 - Deliberative Process

Sam

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Environmental Protection Agency
Office of Water
1200 Pennsylvania Ave. NW

Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

To: Veal, Lee[Veal.Lee@epa.gov]; Perrin, Alan[Perrin.Alan@epa.gov]; Edwards, Jonathan[Edwards.Jonathan@epa.gov]; Christ, Lisa[Christ.Lisa@epa.gov]; Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]
From: DeCair, Sara
Sent: Wed 8/26/2015 9:28:30 PM
Subject: FYI: From OEM-CMAT: Check our water math

FYI, this sounds good.

From: Kudarauskas, Paul
Sent: Wednesday, August 26, 2015 5:27 PM
To: DeCair, Sara; Cardarelli, John
Cc: Hudson, Scott
Subject: RE: For Monday: Check our water math

Sara-

If Scott does not see and issue, then there is no sense having John rummage through. We will reply back to this specific comment through Tulis along with our other comments.

Thanks!

Kuda

Paul G. Kudarauskas, "Kuda"
Chief, Field Operations Branch
CBRN Consequence Management Advisory Division

Office of Emergency Management
United States Environmental Protection Agency

Mobile: 202-344-5382 Office: 202-564-2415

From: DeCair, Sara
Sent: Wednesday, August 26, 2015 5:22 PM
To: Kudarauskas, Paul; Cardarelli, John
Cc: Hudson, Scott
Subject: RE: For Monday: Check our water math

Kuda,

The DRL formula is common to the other PAGs for evacuation & relocation and DRLs are published in the FRMAC Assessment Manuals:

http://www.nv.doe.gov/library/publications/frmac/Forms/AllItems.aspx?RootFolder=%2Flibrary%2Fpublicatior

Ex. 5 - Deliberative Process

Sara

From: Kudarauskas, Paul
Sent: Wednesday, August 26, 2015 5:03 PM
To: DeCair, Sara; Cardarelli, John
Cc: Hudson, Scott

Subject: RE: For Monday: Check our water math

Sara-

Per our conversation, John is being worked like a rented mule and honestly does not have any time in the next two weeks. Ex. 5 - Deliberative Process

Ex. 5 - Deliberative Process

Thanks

Paul G. Kudarauskas, "Kuda"
Chief, Field Operations Branch
CBRN Consequence Management Advisory Division

Office of Emergency Management
United States Environmental Protection Agency
Mobile: 202-344-5382 Office: 202-564-2415

From: DeCair, Sara
Sent: Wednesday, August 19, 2015 11:11 AM
To: Cardarelli, John
Cc: Kudarauskas, Paul; Kappelman, David; Hudson, Scott; Veal, Lee; Hernandez-Quinones, Samuel
Subject: For Monday: Check our water math

John,

Ex. 5 - Deliberative Process

Let us know if you run into questions, and feel free to call my cell anytime: Ex. 6 - Personal Privacy

S.

Sara D. DeCair

http://www.epa.gov/radiation/rert/pags.html

202-343-9108

Room 1416 B in WJC West

To: Veal, Lee[Veal.Lee@epa.gov]; Perrin, Alan[Perrin.Alan@epa.gov]; Edwards, Jonathan[Edwards.Jonathan@epa.gov]; Christ, Lisa[Christ.Lisa@epa.gov]; Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]
From: DeCair, Sara
Sent: Wed 8/26/2015 9:09:42 PM
Subject: Follow up with OSWER: Quick thing I promise: Check our water math

Just FYI:

Scott confirmed the math. I now have another follow up question from Kuda. Stay tuned.

From: DeCair, Sara
Sent: Wednesday, August 26, 2015 4:16 PM
To: Hudson, Scott
Cc: Kudarauskas, Paul; Cardarelli, John
Subject: RE: Quick thing I promise: Check our water math

Not unless you really want to. We've got David Pawel doing a QA review of look up values and the results. I'm just making sure we've heard from everyone who's key on this subject area!

Thanks,

S.

From: Hudson, Scott
Sent: Wednesday, August 26, 2015 4:15 PM
To: DeCair, Sara
Cc: Kudarauskas, Paul; Cardarelli, John
Subject: RE: Quick thing I promise: Check our water math

I got what you got for the example calc and have no issues or questions about these values.

Ex. 5 - Deliberative Process

scott

From: DeCair, Sara
Sent: Wednesday, August 26, 2015 4:01 PM
To: Cardarelli, John; Hudson, Scott
Cc: Kudarauskas, Paul
Subject: Quick thing I promise: Check our water math

John, Scott,

The example DRL calc is just a couple lines and I think we got across all our reasons for choosing assumptions during our call/webinar the week before last. If you can confirm you understand this, then I bet reviews by your management will be easier. Health physics makes people nervous?

Thanks tons for getting back to me as soon as you can,

Sara

Cell 202-738-2871

From: DeCair, Sara
Sent: Wednesday, August 19, 2015 11:11 AM
To: Cardarelli, John
Cc: Kudarauskas, Paul; Kappelman, David; Hudson, Scott; Lee Veal; Hernandez-Quinones, Samuel
Subject: For Monday: Check our water math

John,

Ex. 5 - Deliberative Process

Let us know if you run into questions, and feel free to call my cell anytime: Ex. 6 - Personal Privacy

S.

Sara D. DeCair

http://www.epa.gov/radiation/rert/pags.html

202-343-9108

Room 1416 B in WJC West

To: Christ, Lisa[Christ.Lisa@epa.gov]
Cc: Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]
From: Ellis, Jerry
Sent: Wed 8/26/2015 7:27:44 PM
Subject: DW PAG: Revised communication materials 8/26
Draft DW PAG website language-links-to fact-sheets-8-26-15.docx
General Public Fact Sheet 8-26-15 CLEAN.docx
Internal Q and A Document 8-26-2015 CLEAN.docx
Technical Fact Sheet for DW PAG 8-26-15 CLEAN.docx
DRAFT Drinking Water PAG Comms Plan 8-26-15 CLEAN.doc
Draft Drinking Water PAG Desk Statement 8-26-15 CLEAN.docx

Hi Lisa,

I have made the changes you provided in writing and I also updated the general public fact sheet that is now consistent with the DW chapter. For question #13 in the internal Q&As, Sara just sent me a slightly revised version, so I simply replaced what was there with her version.

Jerry L. Ellis, Jr.

Environmental Scientist

U.S. Environmental Protection Agency

Standards and Risk Management Division

Office of Ground Water and Drinking Water

1200 Pennsylvania Ave. (4607M), N.W.

Washington, D.C. 20460

Phone: 202-564-2766

To: Christ, Lisa[Christ.Lisa@epa.gov]
From: Hernandez-Quinones, Samuel
Sent: Wed 8/26/2015 5:15:01 PM
Subject: Re: Chapter Edits
8-26-15 Edits Draft Protective Action Guide.docx

Hi Lisa,

Attached is the chapter with edits. Let me know if you have a few minutes so that I can call you and talk briefly about the edits. Here are my edits as well as those from Office of Air.

Also this copy of the document contains the edits compared with the version that was reviewed by Kopocis.

Thank You

Sam

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Environmental Protection Agency
Office of Water
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Christ, Lisa
Sent: Wednesday, August 26, 2015 10:49 AM
To: Hernandez-Quinones, Samuel
Subject: RE: Chapter Edits

Hi Sam,

Are you working with the latest version? I see Sara sent something else late yesterday that includes additional comments from Alan. Please verify that we're all working from the same version. I would prefer to look at all edits at one time to avoid the back and forth we've had

previously.

Thanks-

Lisa

From: Hernandez-Quinones, Samuel
Sent: Wednesday, August 26, 2015 10:34 AM
To: Christ, Lisa
Subject: Chapter Edits

Hi Lisa,

I will send the edited chapter with accepted/rejected edits to you shortly.

Sam

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Environmental Protection Agency
Office of Water
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

To: Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]; Christ, Lisa[Christ.Lisa@epa.gov]; Perrin, Alan[Perrin.Alan@epa.gov]; Edwards, Jonathan[Edwards.Jonathan@epa.gov]
Cc: Veal, Lee[Veal.Lee@epa.gov]
From: DeCair, Sara
Sent: Tue 8/25/2015 9:43:41 PM
Subject: New redline Water PAG chapter for your review
Draft Protective Action Guide 8-25-15.docx

Before going back to OSWER for an expedited showstoppers review, please see if you can live with all the very small editorial changes that Sam, myself and Alan have made. I think this redline version strikes a perfect balance of responsiveness to OSWER's comments and preserving the intent we've had throughout the drafting process. If you don't see the changes, go to Review and click All Markup.

If a quick call would be helpful to talk about this, I'll gladly schedule something tomorrow or Thursday. It'd be ideal to get this to OSWER by the end of the week, if possible. Thank you all so much!

Sara

Sara D. DeCair

http://www.epa.gov/radiation/rert/pags.html

202-343-9108

Room 1416 B in WJC West

To: Christ, Lisa[Christ.Lisa@epa.gov]
Cc: Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]
From: Ellis, Jerry
Sent: Tue 8/25/2015 3:31:04 PM
Subject: PAG updated communications materials
Draft DW PAG website language-links-to fact-sheets-8-25-15.docx
General Public Fact Sheet 8-25-15 CLEAN.docx
Technical Fact Sheet for DW PAG 8-25-15 CLEAN.docx
Draft Drinking Water PAG Desk Statement 8-25-15 CLEAN.docx
DRAFT Drinking Water PAG Comms Plan 8-25-15 CLEAN.doc
Internal Q and A Document 8-18-2015 CLEAN.docx

Lisa,

Attached are the updated communications material. Changes made reflect Jessica and Tony's edits and recommendations; also your last changes (with Sara) to the internal Q&As last week.

Internal Q&As (8-18-15 clean version)

Communications Plan

Desk Statement

General Public Fact Sheet

Technical Fact Sheet

Website language

Jerry L. Ellis, Jr.

Environmental Scientist

U.S. Environmental Protection Agency

Standards and Risk Management Division

Office of Ground Water and Drinking Water

1200 Pennsylvania Ave. (4607M), N.W.

Washington, D.C. 20460

Phone: 202-564-2766

To: Christ, Lisa[Christ.Lisa@epa.gov]
Cc: Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]
From: Ellis, Jerry
Sent: Mon 8/24/2015 8:54:07 PM
Subject: FW: Suggestions on the Fact Sheets
Technical Fact Sheet for DW PAG-tnsuggestions-8-24-15.docx
General Public Fact Sheet -tnsuggestions.docx

Lisa and Sam: I will do the clean up on these and send clean versions, along with the other communication documents.

Jerry L. Ellis, Jr.
Environmental Scientist
U.S. Environmental Protection Agency
Standards and Risk Management Division
Office of Ground Water and Drinking Water
1200 Pennsylvania Ave. (4607M), N.W.
Washington, D.C. 20460
Phone: 202-564-2766

-----Original Message-----
From: Nesky, Anthony
Sent: Monday, August 24, 2015 4:40 PM
To: Ellis, Jerry
Cc: White, Rick; Veal, Lee; DeCair, Sara; Wieder, Jessica
Subject: Suggestions on the Fact Sheets

Dear Jerry:

Attached are suggestions on the two fact sheets. I have two suggestions that I ask you to accept:

Ex. 5 - Deliberative Process

PAG. You may want to provide instructions on how to submit comments.

Please feel free to call me with any questions or concerns. I will be teleworking today and tomorrow, and can be reached at Ex. 6 - Personal Privacy

To: Hostage, Barbara[Hostage.Barbara@epa.gov]
Cc: Christ, Lisa[Christ.Lisa@epa.gov]
From: Veal, Lee
Sent: Mon 8/24/2015 3:13:50 PM
Subject: Summary of Drinking Water PAG discussions
OSWER overarching comments on draft water PAG_with OW_OAR responses.docx
Status update on internal review of Drinking Water PAG draft August 2015.docx

Good morning Barbara,

It was nice to meet you this morning. Here is an electronic copy of the two documents that we discussed today, along with my emails to the participating Branch Chiefs and Dana Stalcup. Please let us know if we can provide more background.

Lee

Lee Ann B. Veal
Director, Center for Radiological Emergency Management
Radiation Protection Division
Office of Radiation and Indoor Air
Office: 202-343-9448
Cell: 202-617-4322
www.epa.gov/radiation

From: Veal, Lee
Sent: Wednesday, August 19, 2015 4:55 PM
To: Stalcup, Dana
Cc: Kathleen Raffaele (raffaele.kathleen@epa.gov); Scozzafava, MichaelE; Christ, Lisa
Subject: FW: Summary of Drinking Water PAG discussions

Hi Dana,

I know that both Mike and Kathleen are on vacation, and I wanted to provide someone there this draft information. I've asked them for corrections, if Lisa and I got this wrong, but it may be that they don't have much time to respond.
I think that given we agree with nearly everything, perhaps this won't be too bad of a draft to use as a starting point for Monday.

Lee

Lee Ann B. Veal
Director, Center for Radiological Emergency Management
Radiation Protection Division
Office of Radiation and Indoor Air
Office: 202-343-9448
Cell: 202-617-4322

www.epa.gov/radiation

From: Veal, Lee
Sent: Wednesday, August 19, 2015 4:52 PM
To: Kudarauskas, Paul; Scozzafava, MichaelE; Kathleen Raffaele (raffaele.kathleen@epa.gov)
Cc: Christ, Lisa
Subject: Summary of Drinking Water PAG discussions

Paul, Mike and Kathleen,

As we left our discussion on August 13, we agreed that we'd touch base on the drinking water PAG draft. I understand that the staff discussions of the calculations went rather well, so I am sending you an email in lieu of another meeting.

Also, knowing that our ODs are meeting on Monday and at least two of you are on vacation, we thought it would be useful to have some written materials to share. We prepared a summary of what we think we decided during the August 13 discussion and I'm including that in the attached file. We'd be interested in your feedback on this document. Additionally, we prepared a short synopsis of progress to date that might be useful.

If you have corrections, comments or other thoughts that would be useful to the group in preparing for Monday, please do share them. Thank you for your attention on this draft.

Lee

Lee Ann B. Veal
Director, Center for Radiological Emergency Management
Radiation Protection Division
Office of Radiation and Indoor Air
Office: 202-343-9448
Cell: 202-617-4322
www.epa.gov/radiation

-----Original Appointment-----
From: Veal, Lee
Sent: Tuesday, August 11, 2015 4:54 PM
To: Veal, Lee; Kudarauskas, Paul; Christ, Lisa
Cc: Scozzafava, MichaelE; Kathleen Raffaele (raffaele.kathleen@epa.gov)
Subject: PAG comment review
When: Thursday, August 13, 2015 9:30 AM-10:30 AM (UTC-05:00) Eastern Time (US & Canada).

Where: DCRoomWest1424/OPEI

Subject: Branch Chief overview of OSWER comments on Water PAG draft (ODs will meet later in August, technical staff can meet as their schedules permit)

OW and OAR are suggesting this approach as it promotes our getting a draft Water PAG out for public review quickly. I'm attaching the comments for reference. I suggest that we focus on the overarching comments document as a first priority. Thanks

EPA West 1424 << File: draft OSWER Comments on draft water PAG 080315.docx >> << File: Draft Protective Action Guide 6-16-2015 OGWDW_OSWER Comments 080315.docx >>

To: DeCair, Sara[DeCair.Sara@epa.gov]; Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]; Veal, Lee[Veal.Lee@epa.gov]; Christ, Lisa[Christ.Lisa@epa.gov]
Cc: Nesky, Anthony[Nesky.Tony@epa.gov]; Wieder, Jessica[Wieder.Jessica@epa.gov]
From: Ellis, Jerry
Sent: Mon 8/24/2015 2:24:32 PM
Subject: RE: FR pkg matls in process!
Technical Fact Sheet for DW PAG 8-20-15tnedits jwJLE CLEAN.docx
General Public Fact Sheet for DW PAG JLE-8-20-15.docx

FYI and clarification: I am sending the files for two separate fact sheets which can serve as "stand alone" official documents that will have the EPA logo and document numbers assigned. The web content file I sent on 8/20 contains both fact sheet information, but it was slightly modified to flow with website links.

Jerry L. Ellis, Jr.
Environmental Scientist
U.S. Environmental Protection Agency
Standards and Risk Management Division
Office of Ground Water and Drinking Water
1200 Pennsylvania Ave. (4607M), N.W.
Washington, D.C. 20460
Phone: 202-564-2766

-----Original Message-----
From: Ellis, Jerry
Sent: Thursday, August 20, 2015 4:10 PM
To: DeCair, Sara; Hernandez-Quinones, Samuel; Veal, Lee; Christ, Lisa
Cc: Nesky, Anthony; Wieder, Jessica
Subject: RE: FR pkg matls in process!

All,

I have been working with Jessica and Tony to get final versions of the communications materials ready in case we need them for the OD's conversations on Monday. I've attached the revised documents.

Jessica, could you do one last review, with close attention to the web content file (now includes the fact sheet language for the public and public water systems); it may need some modification.
Thank you!

Jerry L. Ellis, Jr.
Environmental Scientist
U.S. Environmental Protection Agency
Standards and Risk Management Division
Office of Ground Water and Drinking Water
1200 Pennsylvania Ave. (4607M), N.W.
Washington, D.C. 20460
Phone: 202-564-2766

-----Original Message-----
From: DeCair, Sara
Sent: Thursday, August 20, 2015 9:50 AM
To: Hernandez-Quinones, Samuel; Veal, Lee; Christ, Lisa; Ellis, Jerry
Subject: FR pkg matls in process!

Great progress on Comms materials this week and the Action Memo and FR Notice are with Alan for final

review now. I think we'll have a good solid FR package folder for both our ODs on Monday morning. Once I get the comments-in chapter from Sam, I will turn it around by COB Friday. My laptop is being replaced right now but I can work in the EOC.
Thank you, too, for the OSWER comment two pager-- that conversation Monday should go very smoothly.
S.

Sent from my iPhone

To: Veal, Lee[Veal.Lee@epa.gov]; Perrin, Alan[Perrin.Alan@epa.gov]; Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]; Christ, Lisa[Christ.Lisa@epa.gov]
Cc: Ellis, Jerry[Ellis.Jerry@epa.gov]; Wieder, Jessica[Wieder.Jessica@epa.gov]; Nesky, Anthony[Nesky.Tony@epa.gov]
From: DeCair, Sara
Sent: Fri 8/21/2015 7:20:49 PM
Subject: Edited Water PAG chapter
Draft Protective Action Guide 8-21-15.docx

Sam and I both made edits in the drinking water PAG proposal based on OSWER's comments, and I re-read all their comments again to make sure we are responsive to all of them for Monday morning's meeting with their managers.

The changes are in redline/strikeout if you go to Review, All Markup. Please see attached and let me know if you see anything we didn't catch. Thank you!

Sara

To: DeCair, Sara[DeCair.Sara@epa.gov]; Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]; Veal, Lee[Veal.Lee@epa.gov]; Christ, Lisa[Christ.Lisa@epa.gov]
Cc: Nesky, Anthony[Nesky.Tony@epa.gov]; Wieder, Jessica[Wieder.Jessica@epa.gov]
From: Ellis, Jerry
Sent: Thur 8/20/2015 8:10:32 PM
Subject: RE: FR pkg matls in process!
DRAFT Drinking Water PAG Comms Plan 8-20-15--tnedits jwJLE CLEAN.doc
8-20-15 Draft DW PAG website language (includes Q&As from public and water systems).docx
Draft Drinking Water PAG Desk Statement 8-20-15-tn-jw-JLE CLEAN (unchanged).docx

All,

I have been working with Jessica and Tony to get final versions of the communications materials ready in case we need them for the OD's conversations on Monday. I've attached the revised documents.

Jessica, could you do one last review, with close attention to the web content file (now includes the fact sheet language for the public and public water systems); it may need some modification.
Thank you!

Jerry L. Ellis, Jr.
Environmental Scientist
U.S. Environmental Protection Agency
Standards and Risk Management Division
Office of Ground Water and Drinking Water
1200 Pennsylvania Ave. (4607M), N.W.
Washington, D.C. 20460
Phone: 202-564-2766

-----Original Message-----
From: DeCair, Sara
Sent: Thursday, August 20, 2015 9:50 AM
To: Hernandez-Quinones, Samuel; Veal, Lee; Christ, Lisa; Ellis, Jerry
Subject: FR pkg matls in process!

Great progress on Comms materials this week and the Action Memo and FR Notice are with Alan for final review now. I think we'll have a good solid FR package folder for both our ODs on Monday morning. Once I get the comments-in chapter from Sam, I will turn it around by COB Friday. My laptop is being replaced right now but I can work in the EOC.
Thank you, too, for the OSWER comment two pager-- that conversation Monday should go very smoothly.
S.

Sent from my iPhone

To: Christ, Lisa[Christ.Lisa@epa.gov]
Cc: Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]; Ellis, Jerry[Ellis.Jerry@epa.gov]
From: Galada, Heather
Sent: Thur 8/20/2015 1:03:00 PM
Subject: Re: Update on PAGs for Peter

Thanks, Lisa! I'll email it to Peter. Could you please print a copy and leave it with Paula today or tomorrow since I'm not in office?
Thanks,
Heather

Sent from my iPhone

On Aug 20, 2015, at 8:03 AM, Christ, Lisa <Christ.Lisa@epa.gov> wrote:

Heather-

Attached is the document outlining OSWER's overarching concerns regarding the DW PAG and the outcome of the discussion we had the BC level. Please provide the attached to Peter in preparation for the Monday call with OWSER ODs. If our response changes based on the call Monday, we can update it before the Tuesday meeting with Ken. Let me know if you have questions or concerns.

Thanks-

Lisa

From: Galada, Heather
Sent: Wednesday, August 19, 2015 6:16 PM
To: Hernandez-Quinones, Samuel
Cc: Christ, Lisa
Subject: Re: Update on PAGs for Peter

Hi Sam,

He's meeting with him Tuesday. I can just put a bullet in to remind him to talk about whatever happens at Monday's meeting!

Thanks!

Heather

Sent from my iPhone

On Aug 19, 2015, at 5:43 PM, Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov> wrote:

Hi Heather,

Do you know when Dr. Grevatt is meeting with Kopocis?

We will be having a meeting with OSWER on Monday and I think the outcome of that meeting should dictate the items to be included for the Kopocis meeting.

We can certainly provide some bullets, but we are at a stage on the OSWER review that is critical to determine the next steps for the PAGs.

Sam

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Environmental Protection Agency
Office of Water
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Galada, Heather
Sent: Wednesday, August 19, 2015 5:24 PM
To: Christ, Lisa; Hernandez-Quinones, Samuel
Subject: Update on PAGs for Peter

Hi Lisa and Sam,

Ashley asked me to put together some updated for Peter to talk to Ken about early next week. I'm out of the office tomorrow and Friday, so I'm working on putting everything together today (and will probably finish it up tomorrow morning or Friday.) Could you please provide me with a few bullets on the Drinking Water Protective Action Guidelines?

Thanks,

Heather

Heather C. Galada, MPH CPH

OGWDW Acting Communications Director

US Environmental Protection Agency

Office of Ground Water & Drinking Water

1200 Pennsylvania Avenue, NW

Washington, DC 20460

202.564.5248

<OSWER overarching comments on draft water PAG_with OW_OAR responses (3).docx>

To: Stalcup, Dana[Stalcup.Dana@epa.gov]
Cc: Raffaele, Kathleen[raffaele.kathleen@epa.gov]; Scozzafava, MichaelE[Scozzafava.MichaelE@epa.gov]; Christ, Lisa[Christ.Lisa@epa.gov]
From: Veal, Lee
Sent: Wed 8/19/2015 8:54:36 PM
Subject: FW: Summary of Drinking Water PAG discussions
OSWER overarching comments on draft water PAG_with OW_OAR responses.docx
Status update on internal review of Drinking Water PAG draft August 2015.docx

Hi Dana,

I know that both Mike and Kathleen are on vacation, and I wanted to provide someone there this draft information. I've asked them for corrections, if Lisa and I got this wrong, but it may be that they don't have much time to respond.
I think that given we agree with nearly everything, perhaps this won't be too bad of a draft to use as a starting point for Monday.

Lee

Lee Ann B. Veal
Director, Center for Radiological Emergency Management
Radiation Protection Division
Office of Radiation and Indoor Air
Office: 202-343-9448
Cell: 202-617-4322
www.epa.gov/radiation

From: Veal, Lee
Sent: Wednesday, August 19, 2015 4:52 PM
To: Kudarauskas, Paul; Scozzafava, MichaelE; Kathleen Raffaele (raffaele.kathleen@epa.gov)
Cc: Christ, Lisa
Subject: Summary of Drinking Water PAG discussions

Paul, Mike and Kathleen,

As we left our discussion on August 13, we agreed that we'd touch base on the drinking water PAG draft. I understand that the staff discussions of the calculations went rather well, so I am sending you an email in lieu of another meeting.

Also, knowing that our ODs are meeting on Monday and at least two of you are on vacation, we thought it would be useful to have some written materials to share. We prepared a summary of what we think we decided during the August 13 discussion and I'm including that in the attached file. We'd be interested in your feedback on this document. Additionally, we prepared a short synopsis of progress to date that might be useful.

If you have corrections, comments or other thoughts that would be useful to the group in

preparing for Monday, please do share them. Thank you for your attention on this draft.

Lee

Lee Ann B. Veal
Director, Center for Radiological Emergency Management
Radiation Protection Division
Office of Radiation and Indoor Air
Office: 202-343-9448
Cell: 202-617-4322
www.epa.gov/radiation

-----Original Appointment-----
From: Veal, Lee
Sent: Tuesday, August 11, 2015 4:54 PM
To: Veal, Lee; Kudarauskas, Paul; Christ, Lisa
Cc: Scozzafava, MichaelE; Kathleen Raffaele (raffaele.kathleen@epa.gov)
Subject: PAG comment review
When: Thursday, August 13, 2015 9:30 AM-10:30 AM (UTC-05:00) Eastern Time (US & Canada).
Where: DCRoomWest1424/OPEI

Subject: Branch Chief overview of OSWER comments on Water PAG draft (ODs will meet later in August, technical staff can meet as their schedules permit)

OW and OAR are suggesting this approach as it promotes our getting a draft Water PAG out for public review quickly. I'm attaching the comments for reference. I suggest that we focus on the overarching comments document as a first priority. Thanks

EPA West 1424 << File: draft OSWER Comments on draft water PAG 080315.docx >> << File: Draft Protective Action Guide 6-16-2015 OGWDW_OSWER Comments 080315.docx >>

To: Christ, Lisa[Christ.Lisa@epa.gov]
Cc: Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]
From: Ellis, Jerry
Sent: Wed 8/19/2015 6:08:58 PM
Subject: FW: Drinking Water PAG Comm Docs
QA Document 8-19-15 tn-sd-jw.docx
Draft Drinking Water PAG Desk Statement 8-19-15--tn-jw.docx
Draft drinking water pag website language.docx
DRAFT Drinking Water PAG Comms Plan Clean 8-19-15--tnedits jw.doc

Lisa,

So we got back edits on the communication documents today.

Jerry L. Ellis, Jr.

Environmental Scientist

U.S. Environmental Protection Agency

Standards and Risk Management Division

Office of Ground Water and Drinking Water

1200 Pennsylvania Ave. (4607M), N.W.

Washington, D.C. 20460

Phone: 202-564-2766

From: Wieder, Jessica
Sent: Wednesday, August 19, 2015 12:12 PM
To: Ellis, Jerry; DeCair, Sara
Cc: Nesky, Anthony; White, Rick
Subject: Drinking Water PAG Comm Docs

Jerry and Sara,

Tony and I reviewed four of the documents. We will get to the technical document after lunch.

Here are our edits to the:

- Desk Statement (rewritten)
- Comm Plan (edited)
- Website (rewritten)
- Internal Q&A (edited)

We want to stress that this is a proposal throughout all four pieces.

Please call if you have questions.

Jess

Jessica Wieder

U.S. EPA

Radiation Protection Program

Center for Radiation Information and Outreach

w: 202-343-9201

c: 202-420-9353

To: Christ, Lisa[Christ.Lisa@epa.gov]
From: Veal, Lee
Sent: Wed 8/19/2015 3:24:57 PM
Subject: Updated document
OSWER overarching comments on draft water PAG_with OW_OAR responses.docx

Lisa,

After checking in with our new contact in the Office of Policy, we understand that they do not circulate the documents again for internal review. Therefore, I adjusted the language to tell OSWER that will give them a copy of the full manual as it is prepared for submission to the Office of Policy.

Ex. 5 - Deliberative Process

Thanks

Lee

Lee Ann B. Veal

Director, Center for Radiological Emergency Management

Radiation Protection Division

Office of Radiation and Indoor Air

Office: 202-343-9448

Cell: 202-617-4322

www.epa.gov/radiation

To: Christ, Lisa[Christ.Lisa@epa.gov]
From: Veal, Lee
Sent: Wed 8/19/2015 1:54:21 PM
Subject: RE: Outcome of Me3eting with OSWER on DW PAG
OSWER overarching comments on draft water PAG_with OW_OAR responses.docx

Hi Lisa,

Here are a couple of edits. I'm around all day, with one management meeting in a couple of minutes and then a short noon call.

Sara tells me that she and Sam have been busy. Sam is hoping to have something to her maybe tomorrow.

Lee

Lee Ann B. Veal

Director, Center for Radiological Emergency Management

Radiation Protection Division

Office of Radiation and Indoor Air

Office: 202-343-9448

Cell: 202-617-4322

www.epa.gov/radiation

From: Christ, Lisa
Sent: Tuesday, August 18, 2015 3:59 PM
To: Veal, Lee
Subject: Outcome of Me3eting with OSWER on DW PAG

Hi Lee,

I added our response to the OSWER overarching comments based on our meeting last week. Please make sure my notes agree with your notes/recollection of the discussion. Feel free to modify as needed.

Thanks-

Lisa

~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

Lisa Christ, Chief

Targeting and Analysis Branch

Office of Ground Water and Drinking Water

USEPA

1200 Pennsylvania Ave NW
Washington, DC 20460-0001
phone: 202.564.8354
fax: 202.564-3760

Mail Code: 4607M
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

To: Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]; Ellis, Jerry[Ellis.Jerry@epa.gov]; Wieder, Jessica[Wieder.Jessica@epa.gov]; Nesky, Anthony[Nesky.Tony@epa.gov]
Cc: Veal, Lee[Veal.Lee@epa.gov]; Perrin, Alan[Perrin.Alan@epa.gov]; Christ, Lisa[Christ.Lisa@epa.gov]
From: DeCair, Sara
Sent: Tue 8/18/2015 9:14:31 PM
Subject: Updated Q&A
Q&A Document 8-18-2015.docx

I worked with Mike Noska and Bill Cunningham at FDA to edit Questions 5&6, and changed the approach on lucky #13. Please see attached redline for the changes. Some of this language might also serve well in our Comms materials, which are being finished up this week. (Thank you all!)

Sara

Sara D. DeCair

http://www.epa.gov/radiation/rert/pags.html

202-343-9108

Room 1416 B in WJC West

To: Nesky, Anthony[Nesky.Tony@epa.gov]; Wieder, Jessica[Wieder.Jessica@epa.gov]
Cc: Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]; Christ, Lisa[Christ.Lisa@epa.gov]; DeCair, Sara[DeCair.Sara@epa.gov]; Veal, Lee[Veal.Lee@epa.gov]
From: Ellis, Jerry
Sent: Fri 8/14/2015 7:17:10 PM
Subject: PAG Communication documents - attached
DRAFT Drinking Water PAG Comms Plan Clean 6-17-15.doc
Draft Drinking Water PAG Desk Statement 4-16-15.docx
General Public Fact Sheet for DW PAG 7-16-15 clean.docx
Technical Fact Sheet for DW PAG 7-16-15 clean.docx

Hi Tony/ Jessica,

I am sending these documents over to you to begin a final review since we are getting close to getting the package ready for OP. We are still working with the internal Q&A document. In light of recent discussions with OSWER, please take a look and let me know if there are any adjustments that should be made to these documents (maybe we should take another look at the

Ex. 5 - Deliberative Process

Thank you.

Jerry L. Ellis, Jr.

Environmental Scientist

U.S. Environmental Protection Agency

Standards and Risk Management Division

Office of Ground Water and Drinking Water

1200 Pennsylvania Ave. (4607M), N.W.

Washington, D.C. 20460

Phone: 202-564-2766

To: Perrin, Alan[Perrin.Alan@epa.gov]; Veal, Lee[Veal.Lee@epa.gov]; Edwards, Jonathan[Edwards.Jonathan@epa.gov]; Christ, Lisa[Christ.Lisa@epa.gov]; Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]; Ellis, Jerry[Ellis.Jerry@epa.gov]; Wieder, Jessica[Wieder.Jessica@epa.gov]; Nesky, Anthony[Nesky.Tony@epa.gov]
From: DeCair, Sara
Sent: Tue 8/11/2015 9:37:34 PM
Subject: Latest Internal Q&A on Water PAG
Q&A Document 8-10-2015.docx

For ongoing discussions regarding the water PAG proposal, please take a look at the attached Internal Q&A and let me know if you see anything that needs to be changed or added. Thank you!

Sara

Sara D. DeCair

http://www.epa.gov/radiation/rert/pags.html

202-343-9108

Room 1416 B in WJC West

To: Burneson, Eric[Burneson.Eric@epa.gov]
From: Christ, Lisa
Sent: Tue 1/17/2017 3:12:56 PM
Subject: FW: Compare Document DW PAG Input
Compare Doc Redline_Final DW PAG Input.docx
Compare Doc Redline_Final DW PAG Input.pdf

From: Christ, Lisa
Sent: Tuesday, January 17, 2017 9:22 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Subject: FW: Compare Document DW PAG Input

Hi Eric,

Attached is the track change document Diane D'Arrigo requested. Do you want this in pdf?

Lisa

From: Hernandez-Quinones, Samuel
Sent: Tuesday, January 17, 2017 7:41 AM
To: Christ, Lisa <Christ.Lisa@epa.gov>
Subject: Compare Document DW PAG Input

Hi Lisa,

Attached is the redline compare document.

Sam

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water

Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

To: Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]
From: Christ, Lisa
Sent: Thur 1/12/2017 5:54:53 PM
Subject: FW: CMS New Assignment - PAGs & DW 900 Method - AX-17-000-1597
17-000-1597.Borello.PAGs.pdf

Sam - also need a response for this letter, it's due tomorrow and I'm out.
Thnx-L

-----Original Message-----
From: Flaharty, Stephanie
Sent: Thursday, December 08, 2016 2:04 PM
To: Christ, Lisa <Christ.Lisa@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>
Cc: Burneson, Eric <Burneson.Eric@epa.gov>; Oshida, Phil <Oshida.Phil@epa.gov>; Greene, Ashley <Greene.Ashley@epa.gov>
Subject: CMS New Assignment - PAGs & DW 900 Method - AX-17-000-1597

Hello,

The attached control AX-17-000-1597 has been assigned to your office. The direct reply (at the DD level) is due December 15th.

Summary Information -
Control Number: AX-17-000-1597
Control Subject: PAGs & US EPA Finished Drinking Water 900 Method being used on raw untreated water suspected of containing radiation
From: Borello, Chris

Thanks,
Steph

Cc: Flaharty, Stephanie[Flaharty.Stephanie@epa.gov]; Arrigoni, Holly[Arrigoni.Holly@epa.gov]
To: Muellerleile, Caryn[Muellerleile.Caryn@epa.gov]; Hill, Glynis[Hill.Glynis@epa.gov]
From: Christ, Lisa
Sent: Tue 1/10/2017 10:32:39 PM
Subject: Fwd: Updated PAG FRN
PAG FRN final_V2.docx
ATT00001.htm

Here it is ladies!

Sent from my iPhone

Begin forwarded message:

From: "Greene, Ashley" <Greene.Ashley@epa.gov>
Date: January 10, 2017 at 4:54:29 PM EST
To: "Burneson, Eric" <Burneson.Eric@epa.gov>, "Christ, Lisa" <Christ.Lisa@epa.gov>, "Wadlington, Christina" <Wadlington.Christina@epa.gov>
Cc: "Mclain, Jennifer" <Mclain.Jennifer@epa.gov>
Subject: Updated PAG FRN

Hi all –

Just to keep you updated, I moved the DW PAG package up to OW this afternoon for Joel's signature. Peter did have two very minor edits the FRN. Attached is the updated version.

Thanks,

Ashley

****

Ashley Greene

Special Assistant

Office of Ground Water and Drinking Water

U.S. Environmental Protection Agency

Phone: (202) 566-1738

Email: greene.ashley@epa.gov

****

To: Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]; Ellis, Jerry[Ellis.Jerry@epa.gov]
From: Christ, Lisa
Sent: Mon 1/9/2017 3:16:59 PM
Subject: FW: e-copies of PAG FRN materials
Clean Version EPA Draft Final Drinking Water PAG (OMB cleared).docx
IQG NonInfluential DW PAG.docx
PAG Transmittal Memo Eric to PeterG 12-21-16.docx
PAG Transmittal Memo PeterG to JoelB 12-21-16.docx
Pre-Publication Disclaimer.docx
typesetting request form.pdf
Final Drinking Water PAG FRN - OMB Comments addressed 12.29.16.docx

[redacted]

ROLL OUT PAGS FINAL 1.9.17.docx

From: Christ, Lisa
Sent: Monday, January 09, 2017 9:07 AM
To: Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>; Greene, Ashley <Greene.Ashley@epa.gov>; Gonzalez, Yvonne V. <Gonzalez.Yvonne@epa.gov>
Cc: Wadlington, Christina <Wadlington.Christina@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>
Subject: e-copies of PAG FRN materials

To: Hernandez-Quinones, Samuel[Hernandez.Samuel@epa.gov]
From: Christ, Lisa
Sent: Mon 1/9/2017 2:48:19 PM
Subject: RE: DW PAGs

Hi Sam,

I just sent a meeting invitation for 11am. We are planning signature on 1/11 or 1/12. Please follow up on a couple things for our call.

1. Sara was incorporating the chapter into the larger PAG; check on status

2. Sara asked for the FRN; check if she has comments

3. I sent Paul the FRN Friday for concurrence; check on status.

Thanks-

Lisa

From: Hernandez-Quinones, Samuel
Sent: Monday, January 09, 2017 9:25 AM
To: Christ, Lisa <Christ.Lisa@epa.gov>
Subject: DW PAGs

Hi Lisa,

Let me know when it is a good time so I can call you for a quick update on the PAGs.

Thanks

Sam

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water

Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

To: Flaharty, Stephanie[Flaharty.Stephanie@epa.gov]; Greene, Ashley[Greene.Ashley@epa.gov]; Gonzalez, Yvonne V.[Gonzalez.Yvonne@epa.gov]
Cc: Wadlington, Christina[Wadlington.Christina@epa.gov]; Burneson, Eric[Burneson.Eric@epa.gov]
From: Christ, Lisa
Sent: Mon 1/9/2017 2:06:53 PM
Subject: e-copies of PAG FRN materials

Clean Version EPA Draft Final Drinking Water PAG (OMB cleared).docx
IQG NonInfluential DW PAG.docx
PAG Transmittal Memo Eric to PeterG 12-21-16.docx
PAG Transmittal Memo PeterG to JoelB 12-21-16.docx
Pre-Publication Disclaimer.docx
typesetting request form.pdf
Final Drinking Water PAG FRN - OMB Comments addressed 12.29.16.docx
ROLL OUT PAGS FINAL 1.5.17.docx

To: Burneson, Eric[Burneson.Eric@epa.gov]
Cc: Oshida, Phil[Oshida.Phil@epa.gov]; Huff, Lisa[Huff.Lisa@epa.gov]
From: Christ, Lisa
Sent: Tue 1/3/2017 9:10:35 PM
Subject: PAG pre-meet materials
ROLL OUT PAGS FINAL 12.16.16.docx
DW PAG pre meet with NGOs.docx
Public Comments Draft DW PAG_v3 11-10-16 - OGC approved.docx
epa2016_2723a.pdf
epa2016_2723b.pdf

Hi Eric,

Attached is a briefing paper with

- Key messages
- Background
- Main concerns raised by NGOs during public comment.

I've also attached the two FOIA documents that were linked in the Inside EPA article, but not part of OW's release; the internal response to public comment document OGC reviewed and the current version of the rollout that is with OPA.

Lisa

To: DeCair, Sara[DeCair.Sara@epa.gov]
From: Christ, Lisa
Sent: Tue 1/3/2017 6:54:49 PM
Subject: FW: PAG roll out
ROLL OUT PAGS FINAL 12.16.16.docx

Comm mats

From: Wadlington, Christina
Sent: Tuesday, January 03, 2017 1:08 PM
To: Christ, Lisa <Christ.Lisa@epa.gov>
Subject: RE: PAG roll out

This is what went to Joel and OPA.

From: Christ, Lisa
Sent: Tuesday, January 03, 2017 1:06 PM
To: Wadlington, Christina <Wadlington.Christina@epa.gov>
Subject: PAG roll out

Hi Christina,

Attached is the last version of the roll out I have. Can you please confirm?

Lisa

To: Amy Doll[adoll@endyna.com]; Marissa McDonough[mmcdonough@endyna.com]
Cc: siddhanti@endyna.com[siddhanti@endyna.com]
From: DeCair, Sara
Sent: Tue 1/3/2017 6:20:57 PM
Subject: Water PAG section to incorporate into PAG Manual
Clean Version EPA Draft Final Drinking Water PAG (OMB 12-29-16) - OGWDW Response.docx

Ladies,

Here is the latest – presumably final – but not yet signed as final – drinking water PAG language. Will you proceed to incorporate it into the PAG Manual in Ch. 4 (ignore numbering in this attachment) as discussed and let me know if you run into any snags? We plan to provide this on our PAGs web page once the FR Notice of Availability is signed, as early as next week. Thank you for letting me know about how long you'll need, since I'm already being asked. Thank you!! And happy new year, isn't it starting off grand?

S.

Sara D. DeCair

202-343-9108

Room 1416 B in WJC West

www.epa.gov/radiation/protective-action-guides-pags

To: Ellis, Jerry[Ellis.Jerry@epa.gov]
From: DeCair, Sara
Sent: Thur 1/12/2017 1:13:56 PM
Subject: Re: PAG Manual *FINAL* with drinking water guidance, on the web

I just hit 12 years on the Pag Manual revision :) glad to put it to bed! Get well quickly -- cheers

Sent from my iPhone

On Jan 12, 2017, at 7:26 AM, Ellis, Jerry <Ellis.Jerry@epa.gov> wrote:

Awesome! Thanks for all of your help with guiding us along for....seems like over 2 years! So I am at home sick today but quietly celebrating in my own little way.

Congrats!

Jerry L. Ellis, Jr.

Physical Scientist

Standards and Risk Management Division

Office of Ground Water and Drinking Water

Phone: 202-564-2766

From: DeCair, Sara
Sent: Wednesday, January 11, 2017 2:34 PM
To: Amy Doll; Andrew.Wallo@eh.doe.gov; asa4@cdc.gov; ben.cacioppo@dtra.mil; derek.favret@hq.doe.gov; Edward.Regnier@hq.doe.gov; John.Jensen@dm.usda.gov; john.mackinney@dhs.gov; john.madrid@dtra.mil; lee.a.nickel1@navy.mil; lodwick.jeffrey@dol.gov; michael.howe@fema.dhs.gov; Michael.Noska@fda.hhs.gov; Patricia.Milligan@nrc.gov; paul.ward@fema.dhs.gov; ricardo.a.reyes@us.army.mil; siddhanti@endyna.com; tdkraus@sandia.gov; Veal, Lee; Wieder, Jessica; william.cunningham@nist.gov; Azzam, Nidal; Chen, Gary; Ellis, Jerry; Freed, Rachel; Hallam, Christopher; Hernandez-Quinones, Samuel; Prioleau, Wagnus
Cc: Hale, Olin; Veal, Lee; Perrin, Alan; Snead, Kathryn; Wieder, Jessica; Nesky, Anthony; White, Rick
Subject: PAG Manual *FINAL* with drinking water guidance, on the web

Fantastic news!! Thanks to the best team of scientists, communicators, contractors

and managers in town, the drinking water guidance was finalized and signed by EPA's Office of Water today, and it is now incorporated in Chapter 4 of our PAG Manual. The new completely complete, truly final, finished Manual is on the web here:

https://www.epa.gov/radiation/protective-action-guides-pags

You'll also find Frequently Asked Questions and the {pre-publication} Federal Register notice announcing it, which will likely be published in the FR in a week or so. Meanwhile, you can read the new Manual, print your own copy, and in your radiation emergency preparedness activities, help the organizations that use the PAGs to get their plans and procedures updated within twelve months, when the new PAGs will be the only ones expected to be in use. Remember that PAGs are merely guidelines, and state, local, tribal, territorial or federal organizations can use any PAGs as they see fit, or as the incident warrants.

Outreach webinars will begin in early February and we're glad to hear any questions you get, to help make our outreach materials more effective. You are a messenger! Spread the word to your colleagues and partners.

Sara D. DeCair

To: Walker, Stuart[Walker.Stuart@epa.gov]
From: Griggs, John
Sent: Mon 1/9/2017 5:39:17 PM
Subject: RE: 900 Methods & Application at SF Sites

Stuart ,

I hope you enjoyed the holidays and let me wish you a belated Happy New Year.

Looking over the memos it's always nice taking a trip down memory lane.

John

John G. Griggs, PhD., Director

National Analytical Radiation Environmental Laboratory (NAREL)

Office of Radiation and Indoor Air (ORIA)

USEPA

334-270-3401

griggs.john@epa.gov

From: Walker, Stuart
Sent: Monday, January 09, 2017 11:05 AM
To: Griggs, John <Griggs.John@epa.gov>
Subject: Fw: 900 Methods & Application at SF Sites

fyi

From: Cibulskis, Karen
Sent: Monday, January 9, 2017 8:34 AM
To: Walker, Stuart; Gartner, Lois; Fitz-James, Schatzi; Scozzafava, MichaelE
Cc: Meier, Kathleen; Adler, Kevn; Novak, Dion
Subject: RE: 900 Methods & Application at SF Sites

Hi, Here are the memos from EPA's NAREL I mentioned in my last email. They are from 2002.

From: Cibulskis, Karen
Sent: Wednesday, December 28, 2016 10:09 AM
To: Walker, Stuart <Walker.Stuart@epa.gov>; Gartner, Lois <Gartner.Lois@epa.gov>; Fitz-James, Schatzi <Fitz-James.Schatzi@epa.gov>; Scozzafava, MichaelE <Scozzafava.MichaelE@epa.gov>
Cc: Meier, Kathleen <meier.kathleen@epa.gov>; Adler, Kevn <adler.kevin@epa.gov>; Novak, Dion <novak.dion@epa.gov>
Subject: Re: 900 Methods & Application at SF Sites

Hi,

See pages 15-18 of the 2016 Five Year Review for the Industrial Excess Landfill (IEL) Site at the link below for a summary of Region 5's responses to comments concerning groundwater sampling, filtration and radiation results at IEL.

https://semspub.epa.gov/work/05/508650.pdf

A copy of the 2004 Office of Inspector General Report addressing this issue is also attached.

EPA also had the National Air and Radiation Environmental Laboratory (NAREL) review the data. NAREL's memos are in SEMS and should be dated around January 1999.

If anyone would like a copy of the NAREL's memos I will send them out when I return to the office and can access them on January 9th.

If you have any other questions or would like to discuss IEL further, just let me know.

Thanks, Karen.

From: Walker, Stuart
Sent: Thursday, December 22, 2016 9:20:11 AM
To: Cibulskis, Karen
Subject: FW: 900 Methods & Application at SF Sites

Per my voicemail

From: Gartner, Lois
Sent: Thursday, December 22, 2016 7:23 AM
To: Fitz-James, Schatzi <Fitz-James.Schatzi@epa.gov>; Walker, Stuart <Walker.Stuart@epa.gov>
Cc: Scozzafava, MichaelE <Scozzafava.MichaelE@epa.gov>
Subject: Re: 900 Methods & Application at SF Sites

thanks, stuart. seems to me we need to ascertain whether the email author's assertion abt IEL is correct...whom can we can contact in Reg 5 for that info? they don't have to craft a response--we should just know one way or the other. if they are using it incorrectly, seems like we need to do something about that...assuming stuart's hunch about what should be happening is correct, then maybe we need to send out a reminder to regions about 900 method. if writer is wrong, then we should say that and point to what epa's guidance is --again, assuming the lab SME is going to say it shouldn't be used. i'll let OGWDW contact know we're working on our piece of response. what do people think?

From: Fitz-James, Schatzi
Sent: Monday, December 19, 2016 8:47:38 PM
To: Walker, Stuart

Cc: Gartner, Lois; Scozzafava, MichaelE
Subject: Re: 900 Methods & Application at SF Sites

Region 5 has already punted so don't think we should go there again. Do we have a policy? I would think a general approach would suffice.

Sent from my iPhone

On Dec 19, 2016, at 7:38 PM, Walker, Stuart <Walker.Stuart@epa.gov> wrote:

Are we supposed to answer what is Superfund's policy or general approach? Or what happened at IEL (which seems to be a R5 answer).

From: Gartner, Lois
Sent: Monday, December 19, 2016 4:27 PM
To: Walker, Stuart
Cc: Fitz-James, Schatzi
Subject: 900 Methods & Application at SF Sites

Stuart: OW is pushing back on us regarding that PAGs control, which references IEL and application of 900 Methods on untreated water. They are going to address the PAGs part but can't speak to the 900 Methods application at SF sites. SOOOO, Schatzi told me we need your input in order to draft a response to the Methods comment in the email, which I've excerpted below.

Ms. McCarthy, I believe that those same US EPA experts **who had long ago shared their worries about the PAGs being implemented all too well**

understood the "gaming" of the rad testing that had already been going on for years. .... - i.e, so called "compliance monitoring" - using the US EPA

"Finished Drinking Water 900 Methods" - methods meant for finished, treated water systems and they said was never meant to be used on raw, untreated water

sources found like at IEL. Please see numerous letters documenting these serious deviations away from what is considered to be best available science in

letters to EPA found on our group's website: http://cclt.starksummit.org

Thus, the EPA scientists not simply expressed their fears of the PAGs being misused leaving Americans at risk to dangerous radiation, *but they likewise raised*

serious concerns to me about the US EPA's unscientific usage of the "EPA Finished Drinking Water 900 Methods" on raw, untreated water sources suspected of

containing radiation, which is what occurred at Uniontown IEL.

Lois Haas Gartner

Special Assistant

Office of Superfund Remediation

and Technology Innovation

U.S. Environmental Protection Agency

703.603.8711 (desk)

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