Seed Treatment

Seed treatments deliver a very precise application that shields seeds from the insects and diseases that exist in the soil during early developmental stages. Seed treatments reduce the environmental impact of the production process by decreasing the number of spray applications of agrichemical products lessening exposure to non-target species, including humans, pollinators and the environment.

EPA currently regulates the pesticides used as seed treatments. A seed may not be treated with a pesticide unless EPA has specifically approved the pesticide for use as a seed treatment on that seed. Seed is regulated by USDA and individual states. There are additional requirements for language on the seed container for neonic-treated seed.

Treated Article Exemption Petition

Recently a group of NGO's led by the Center for Food Safety submitted a petition to EPA seeking to regulate treated seed itself as a pesticide instead of as a treated article. The petition follows a similar lawsuit that was dismissed by a Federal judge ruling in November 2016. The treated article exemption is a longstanding policy of EPA. An article is exempt from regulation under FIFRA by virtue of the treated article exemption if the following three conditions are satisfied: (i) the article contains or is treated with a pesticide; (ii) the pesticide is intended to protect the article itself; and (iii) the pesticide is registered for this use. Treated seeds meet all of these requirements.

Regulating treated seed as a pesticide, as desired by those filing the petition, would likely put an end to the use of seed treatments. It could put a tremendous burden on growers, as each planting will be considered a pesticide application. In addition, the regulations would become overwhelming as each treated seed may need to be registered as a pesticide pursuant to FIFRA. At the very least, each seed treatment formulation which typically contain a number of registered products, would need to have its own full registration.

The potential burden will not result in measurable benefits to the environment, which EPA has acknowledged. EPA has released pollinator assessments for neonic pesticides which all indicate low risks from seed treatment uses.

Next steps

ASTA would welcome the opportunity to provide input to EPA on the potential impact of the petition either through a public comment process or through other means.

Seed Treatment Stewardship

In numerous recent documents EPA has shown strong support for voluntary stewardship methods to reduce exposures during the planting of pesticide treated seed. ASTA and our members take our role in promoting seed treatment stewardship very seriously. Since the inception of the initiative, building grower awareness has been our highest priority.

Program Update - In the last few months we created new content around the 5 Basic Steps for Stewardship of Treated Seed which has been promoted through social media, earned media, handouts at Commodity Classic

and announcements on farm radio through a partnership with National Association of Farm Broadcasters. At the same time, we refreshed and reorganized our [HYPERLINK "http://seed-treatment-guide.com/"] with the goal of making information on stewardship and pollinators easier to access.

On April 26th ASTA, National Corn Growers Association and the Association of Equipment Manufacturers hosted a Planter Demonstration Day for EPA, USDA and Hill staff. The day was a huge success. USDA and EPA staff were very appreciative of the opportunity to get outside and see their work come to life. The day included sessions on the benefits of seed treatment and how seed is treated and planted so that fugitive dust is minimized. Speakers from Bayer, Syngenta, BASF, Monsanto and DuPont Pioneer participated along with Crop Production Services, John Deere, Great Plains and other equipment companies. A video of the event is on [HYPERLINK "https://www.youtube.com/watch?v=aNOaM9a7cYY"].

Biological Seed Treatments

The term biologicals encompasses many different types of products that can be classified under three buckets: biopesticides, biostimulants, and biofertilizers. Which bucket it falls under is determined by the claims made by the seller but generally these are naturally occurring microbes that can be applied to seeds. Even within those 3 types of products, they can be regulated under FFRA by EPA (biopesticides, and biostimulants that are considered Plant Growth Regulators (PGR's)) or by the state fertilizer authorities (biofertilzers and non-PGR biostimulants). Since FIFRA regulated products have clear and predictable regulatory requirements, we are seeking federal oversight with streamlined regulations that are proportionate to risk for biostimulant products. EPA has drafted guidance documents on claims associated with biostimulants.

Next Steps:

ASTA, BPIA, and the Biostimulant Coalition recently sent a letter to Nancy Beck asking EPA to release their guidance ASAP.

PBI

Plant varieties improved with the latest breeding methods are subjected to the same critical performance evaluations and processes that breeders have used for decades to create new plant varieties that are safe to grow and eat. If the plant varieties developed with the newer tools meet the same standards as those developed with more traditional breeding methods, they should be subject to the same treatment under the law.

It is important that USDA, EPA and FDA, the three regulatory agencies, closely coordinate their activities to ensure consistency.

EPA has consistently stated that its intent is to focus its regulatory efforts for Plant Incorporated Protectants (PIPs) to those plant defense mechanisms that are new to plants and may present novel, unknown and/or unfamiliar toxicological profiles. EPA further recognized the safety record of plant breeding in the United States. Based on this safety record, EPA exempted PIPs derived through conventional plant breeding and stated that it did not want to unnecessarily supplant the self-regulating aspects of plant breeding.

ASTA submitted comments to the EPA's Docket on Evaluation of Existing Regulations on May 15th stating PIPs developed through certain gene editing applications meet the definitions under the EPA's existing exemption for conventional breeding and EPA should explicitly clarify this.

Next steps:

ASTA would like to have further dialogue with EPA Office of General Counsel on a legal interpretation for plant breeding innovation.

Message

From: Subramanian, Hema [Subramanian.Hema@epa.gov]
Sent: 1/9/2018 6:11:43 PM
To: Sands, Jeffrey [sands.jeffrey@epa.gov]
Subject: Automatic reply: Corn Refiners Association meeting w/Jeff Sands

I will be out of the office on Tuesday 1/9 for work travel. I will be unable to check email for most of the day, but will respond to your message when I return to the office on Wednesday 1/10.

Message

From: Bowman, Liz [Bowman.Liz@epa.gov]
Sent: 2/16/2018 6:58:18 PM
To: Abboud, Michael [abboud.michael@epa.gov]; Sands, Jeffrey [sands.jeffrey@epa.gov]
Subject: RE: Story on EPA ethics waiver

I think that is fine

From: Abboud, Michael
Sent: Friday, February 16, 2018 11:58 AM
To: Sands, Jeffrey <sands.jeffrey@epa.gov>
Cc: Bowman, Liz <Bowman.Liz@epa.gov>
Subject: Re: Story on EPA ethics waiver

She emailed us as well asking about it. The waiver is available online correct? Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

Sent from my iPhone

On Feb 16, 2018, at 11:55 AM, Sands, Jeffrey <sands.jeffrey@epa.gov> wrote:

> Hi Liz,
>
> Wanted to pass this note along from ProPublica and see how you would best like handle commenting. I have been recused from working on any specific matters with either of these entities/organizations (ARA/Syngenta) per ethics guidelines but wanted to make you were aware and wanted to seek your input on how to best respond.
>
> Please let me know what further details you need or what else you need from me to best respond.
>
> Thanks,
> Jeff
>
> Sent from my iPhone
>
> Begin forwarded message:
>
> > **From:** Claire Perlman <Claire.Perlman@propublica.org>
> > **Date:** February 16, 2018 at 11:28:58 AM EST
> > **To:** "sands.jeffrey@epa.gov" <sands.jeffrey@epa.gov>
> > **Subject: Story on EPA ethics waiver**
> >
> > Hi Jeffrey,
> >
> > I'm with ProPublica, and I'm writing a post about your ethics pledge waiver with the EPA, specifically the possible conflicts of interest that remain with your previous lobbying work at Syngenta and Agricultural Retailers Association and your current role at the EPA. Do you have any comment on the steps you're taking to recuse yourself from any areas in which you have a conflict of interest? For example, are you working on any issues involving atrazine?

Feel free to email me or call me at the number below.

Thanks,

Claire Perlman
ProPublica
www.propublica.org
Ex. 6

Message

From: Shane Kinne [skinne@mocorn.org]
Sent: 11/6/2017 9:30:35 PM
To: Sands, Jeffrey [sands.jeffrey@epa.gov]
CC: Samantha Davis [sdavis@mocorn.org]; Darrick Steen [dsteen@mocorn.org]
Subject: RE: Phone Call

We can just gather at my office in call your office line if that works on your end.

Shane

From: Sands, Jeffrey [mailto:sands.jeffrey@epa.gov]
Sent: Monday, November 6, 2017 3:30 PM
To: Shane Kinne <skinne@mocorn.org>
Cc: Samantha Davis <sdavis@mocorn.org>; Darrick Steen <dsteen@mocorn.org>
Subject: RE: Phone Call

Thanks Shane.

Is there a number I should count on calling you or would the group like to get together and call me on my office line?

From: Shane Kinne [mailto:skinne@mocorn.org]
Sent: Monday, November 6, 2017 3:47 PM
To: Sands, Jeffrey <sands.jeffrey@epa.gov>
Cc: Samantha Davis <sdavis@mocorn.org>; Darrick Steen <dsteen@mocorn.org>
Subject: RE: Phone Call

That works well, Jeff. We appreciate it.

Shane

From: Sands, Jeffrey [mailto:sands.jeffrey@epa.gov]
Sent: Monday, November 6, 2017 1:30 PM
To: Shane Kinne <skinne@mocorn.org>
Cc: Samantha Davis <sdavis@mocorn.org>; Darrick Steen <dsteen@mocorn.org>
Subject: RE: Phone Call

Hey all,

I appreciate you reaching out. How does Thursday morning look on your calendars, say 9:30PM your time?

Thanks much for your consideration. Look forward to speaking soon.

Best,
Jeff

From: Shane Kinne [mailto:skinne@mocorn.org]
Sent: Thursday, November 2, 2017 12:18 PM

To: Sands, Jeffrey <sands.jeffrey@epa.gov>
Cc: Samantha Davis <sdavis@mocorn.org>; Darrick Steen <dsteen@mocorn.org>
Subject: RE: Phone Call

Those folks are now copied. Can't even blame it on being a Monday.

Thanks, Jeff.

Shane

From: Shane Kinne
Sent: Thursday, November 2, 2017 9:56 AM
To: 'sands.jeffrey@epa.gov' <sands.jeffrey@epa.gov>
Subject: Phone Call

Hi Jeff,

I hope all is well. How about those Dawgs? Definitely a better year to be a Georgia fan than Mizzou.

Copied on this email is Samantha Davis and Darrick Steen. Samantha works with me on policy issues and Darrick is our lead on all things environmental. He works with us and Missouri Soybean. Would you have anytime next week to jump on the phone with the three of us?

Thanks in advance!

Shane Kinne
Director of Public Policy
Missouri Corn Growers Association

Message

From: Shane Kinne [skinne@mocorn.org]
Sent: 11/6/2017 8:46:32 PM
To: Sands, Jeffrey [sands.jeffrey@epa.gov]
CC: Samantha Davis [sdavis@mocorn.org]; Darrick Steen [dsteen@mocorn.org]
Subject: RE: Phone Call

That works well, Jeff. We appreciate it.

Shane

From: Sands, Jeffrey [mailto:sands.jeffrey@epa.gov]
Sent: Monday, November 6, 2017 1:30 PM
To: Shane Kinne <skinne@mocorn.org>
Cc: Samantha Davis <sdavis@mocorn.org>; Darrick Steen <dsteen@mocorn.org>
Subject: RE: Phone Call

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Best,
Jeff

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Sent: Thursday, November 2, 2017 12:18 PM
To: Sands, Jeffrey <sands.jeffrey@epa.gov>
Cc: Samantha Davis <sdavis@mocorn.org>; Darrick Steen <dsteen@mocorn.org>
Subject: RE: Phone Call

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Thanks, Jeff.

Shane

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Thanks in advance!

Shane Kinne
Director of Public Policy
Missouri Corn Growers Association

Message

From: Kaiser, Sven-Erik [Kaiser.Sven-Erik@epa.gov]
Sent: 12/18/2017 5:22:17 PM
Subject: Notification: EPA Releases Draft Risk Assessments for Glyphosate

EPA is releasing today for public comment the draft human health and ecological risk assessments for glyphosate, one of the most widely used agricultural pesticides in the United States. Click here to read the draft risk assessments and supporting documents.

The draft human health risk assessment concludes that glyphosate is not likely to be carcinogenic to humans. The agency's assessment found no other meaningful risks to human health when the product is used according to the pesticide label. EPA's scientific findings are consistent with the conclusions of science reviews by a number of other countries as well as the 2017 National Institute of Health Agricultural Health Survey.

EPA's human health review evaluated dietary, residential/non-occupational, aggregate, and occupational exposures. Additionally, the agency performed an in depth review of the glyphosate cancer database, including data from epidemiological, animal carcinogenicity, and genotoxicity studies. Click here for the draft risk assessments and supporting documents.

The ecological risk assessment indicates that there is potential for effects on birds, mammals, and terrestrial and aquatic plants. EPA used the most current risk assessment methods, including an evaluation of the potential effects of glyphosate exposure on animals and plants. Full details on these potential effects as well as EPA's methods for estimating them, can be found within the ecological risk assessment.

The draft risk assessments and supporting documents will be available in glyphosate's registration review docket EPA-HQ-OPP-2009-0361 on www.regulations.gov in early 2018. EPA will open a 60 day public comment period for the draft risk assessments, evaluate the comments received, and consider any potential risk management options for this herbicide.

EPA is scheduled to publish the proposed interim registration review decision for glyphosate in 2019. The proposed interim registration review decision will outline any proposed mitigation measures to reduce risk, if any are needed.

For more information on glyphosate, click here.

Please let me know if any questions. Thanks,
Sven

Sven-Erik Kaiser
U.S. EPA
Office of Congressional and Intergovernmental Relations
1200 Pennsylvania Ave., NW (1305A)
Washington, DC 20460
202-566-2753 (o)
Ex. 6 (c)

Appointment

From: Atkinson, Emily [Atkinson.Emily@epa.gov]
Sent: 12/15/2017 7:24:34 PM
To: Baptist, Erik [Baptist.Erik@epa.gov]; Sands, Jeffrey [sands.jeffrey@epa.gov]; Hengst, Benjamin [Hengst.Benjamin@epa.gov]; Sutton, Tia [sutton.tia@epa.gov]; Woods, Clinton [woods.clinton@epa.gov]

Subject: Canceled: Meet with Growth Energy, re: RVP (Confirmed)
Attachments: Untitled Attachment; Untitled Attachment
Location: WJC-N 5415 + Ex. 6 Participant Code: Ex. 6

Start: 12/21/2017 8:00:00 PM
End: 12/21/2017 8:45:00 PM
Show Time As: Free

Importance: High

To: Mandy Gunasekara, Erik Baptist, Jeff Sands, Ben Hengst, Tia Sutton (+ OTAQ staff list to be provided by Ben), Clint Woods
Outside Attendees (in person): Chris Bliley + TBD

Message

To: Chris Bliley [cbliley@growthenergy.org]

Hi Chris,
You are confirmed for a 45 minute in person meeting on Thursday, December 21, 2017 at 3:00pm EDT with Mandy Gunasekara.
Directions and procedures to 1200 Pennsylvania Avenue NW:

Metro: If you come by Metro get off at the Federal Triangle metro stop. Exit the metro station and go up two sets of escalators to the surface level and turn right. You will see a short staircase and wheelchair ramp leading to a set of glass doors with the EPA logo - that is the William Jefferson Clinton Federal Building, North Entrance.

Taxi: Direct the taxi to drop you off on 12th Street NW, between Constitution and Pennsylvania Avenues, at the elevator for the Federal Triangle metro stop - this is almost exactly half way between the two avenues on 12th Street NW. Facing the building with the EPA logo and American flags, walk toward the building and take the glass door on your right hand side with the escalators going down to the metro on your left – that is the North Lobby of the William Jefferson Clinton building.

Security Procedures: A government issued photo id is required to enter the building and it is suggested you arrive 15 minutes early in order to be cleared and arrive at the meeting room on time. Upon entering the lobby, the meeting attendees will be asked to pass through security and provide a photo ID for entrance. Let the guards know that you were instructed to call 202-564-7404 for a security escort.

Please send me a list of participants in advance of the meeting and feel free to contact me should you need any additional information.

Emily

Emily Atkinson
Management Analyst/Office Manager
Immediate Office of the Assistant Administrator
Office of Air and Radiation, USEPA
Room 5412B, 1200 Pennsylvania Avenue NW
Washington, DC 20460
Voice: 202-564-1850
Email: atkinson.emily@epa.gov

From: Chris Bliley [mailto:cbliley@growthenergy.org]
Sent: Tuesday, December 12, 2017 1:43 PM
To: Atkinson, Emily <Atkinson.Emily@epa.gov>
Subject: RE: RVP Meeting?

Thanks Emily, we'll take it. I'll let you know on attendees from the biofuels side.

From: Atkinson, Emily [mailto:Atkinson.Emily@epa.gov]
Sent: Tuesday, December 12, 2017 11:49 AM
To: Chris Bliley <cbliley@growthenergy.org>
Subject: RE: RVP Meeting?

Hi Chris,

Mandy would have others join her, including OTAQ.

Emily Atkinson
Management Analyst/Office Manager
Immediate Office of the Assistant Administrator
Office of Air and Radiation, USEPA
Room 5412B, 1200 Pennsylvania Avenue NW
Washington, DC 20460
Voice: 202-564-1850
Email: atkinson.emily@epa.gov

From: Chris Bliley [mailto:cbliley@growthenergy.org]
Sent: Tuesday, December 12, 2017 11:45 AM
To: Atkinson, Emily <Atkinson.Emily@epa.gov>
Subject: RE: RVP Meeting?

Thanks Emily, I need to check with some other folks on my end on their availability. Just for clarification, is this just Mandy or will this include a number of people from OTAQ etc?

From: Atkinson, Emily [mailto:Atkinson.Emily@epa.gov]
Sent: Tuesday, December 12, 2017 11:21 AM
To: Chris Bliley <cbliley@growthenergy.org>
Subject: RE: RVP Meeting?

Hi Chris,

Mandy Gunasekara has reviewed this request and asked that I find 45 minute for an in person meeting.

It looks like we could fit this in Thursday, December 21, 2017 at 3:00pm EDT.

Please advise if this could work on your end.

Emily Atkinson
Management Analyst/Office Manager
Immediate Office of the Assistant Administrator
Office of Air and Radiation, USEPA
Room 5412B, 1200 Pennsylvania Avenue NW
Washington, DC 20460
Voice: 202-564-1850
Email: atkinson.emily@epa.gov

> **From:** Chris Bliley <cbliley@growthenergy.org>
> **Date:** December 8, 2017 at 1:58:20 PM EST
> **To:** "Gunasekara, Mandy" <Gunasekara.Mandy@epa.gov>, "Dominguez, Alexander" <dominguez.alexander@epa.gov>
> **Cc:** "Atkinson, Emily" <Atkinson.Emily@epa.gov>
> **Subject: RE: RVP Meeting?**

Thanks Mandy, I'll send dates from our end, but if there are any particularly good or bad days on your end, let us know and I can see if that works for us.

From: Gunasekara, Mandy [mailto:Gunasekara.Mandy@epa.gov]
Sent: Friday, December 8, 2017 1:55 PM
To: Chris Bliley <cbliley@growthenergy.org>; Dominguez, Alexander <dominguez.alexander@epa.gov>
Cc: Atkinson, Emily <Atkinson.Emily@epa.gov>
Subject: RE: RVP Meeting?

Hey Chris, Looping in Emily on this to help with logistics. Chris, did you have specific days in mind? December is pretty full, but we'll see what we can do.
Thanks,
Mandy

From: Chris Bliley [mailto:cbliley@growthenergy.org]
Sent: Friday, December 8, 2017 1:51 PM
To: Dominguez, Alexander <dominguez.alexander@epa.gov>
Cc: Gunasekara, Mandy <Gunasekara.Mandy@epa.gov>
Subject: RE: RVP Meeting?

Alex and Mandy,

Circling back on this to try and get this meeting scheduled as we have some industry views that may be helpful on the RVP evaluation. Thanks and just let me know.

Chris

From: Dominguez, Alexander [mailto:dominguez.alexander@epa.gov]
Sent: Monday, October 30, 2017 6:35 PM
To: Chris Bliley <cbliley@growthenergy.org>
Cc: Gunasekara, Mandy <Gunasekara.Mandy@epa.gov>
Subject: RE: RVP Meeting?

Chris,

Mandy will be on travel the majority of November so we are looking at December for a meeting. I'm more than happy to set up a meeting for when she returns. I will put a reminder on the calendar, but if you could please follow up mid-November when I have a better sense on the December schedule that would be appreciated.

Best,
Alex

Alex Dominguez
Policy Analyst to the Deputy Assistant Administrator
Office of Air and Radiation
U.S. Environmental Protection Agency

From: Chris Bliley [mailto:cbliley@growthenergy.org]
Sent: Monday, October 30, 2017 12:27 PM
To: Gunasekara, Mandy <Gunasekara.Mandy@epa.gov>; Dominguez, Alexander <dominguez.alexander@epa.gov>
Subject: RVP Meeting?

Alex and Mandy,

Hope this finds you well. My understanding is that there is a request in for an industry-wide meeting (us, Renewable Fuels Association, National Corn Growers et al) with you all on RVP (request I believe was coming from RFA) and just wanted to confirm that's on your radar for some time soon as we wanted to make sure we had the right people available. Let me know when you have a minute. Thanks and look forward to the discussion.

Chris

Chris Bliley | Vice President, Regulatory Affairs
Growth Energy
701 8th St NW Suite 450
Washington DC 20001
OFFICE Ex. 6 CELL Ex. 6
TWITTER @GrowthEnergy
FACEBOOK growthenergy.org/facebook
WEBSITE www.growthenergy.org

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Message

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Alex Dominguez
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Office of Air and Radiation
U.S. Environmental Protection Agency

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Chris

Chris Bliley | Vice President, Regulatory Affairs
Growth Energy
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FACEBOOK growthenergy.org/facebook
WEBSITE www.growthenergy.org

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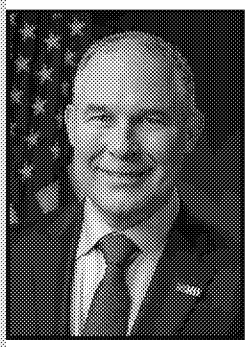
Message

From: This Week @ EPA [epanews@epa.gov]
Sent: 11/6/2017 5:03:10 PM
To: This Week @ EPA [epanews@epa.gov]
Subject: This Week @ EPA - November 6, 2017



Senior Leadership Message

Colleagues,

I'm honored to have this opportunity to say a few words about our nation's heroes as we enter into this week's Veterans Day observance. Our country's success is founded on the sacrifice of generations of people who have served. This Nov. 11, we honor and thank the millions of veterans for their commitment to defending our great nation.

We don't always think about it, but today - and every day - our Soldiers, Sailors, Airmen, Marines, and Coast Guardsmen serve to protect our way of life. Troops are presently deployed across the globe to combat terrorism and to further peace and stability. Also serving are the family members of these brave Americans. Our veterans' families also deserve our collective thanks. Their sacrifices, their support, and their commitment strengthens not only every service member, but our nation as a whole.

Lastly, I want to thank our EPA employees who are veterans. Currently, there are nearly 1,200 veterans working at EPA. It's a true honor to work beside these national heroes who continue their public service with the agency.

Please pause a moment this Veterans Day to recognize the hard-working service members of our military and to honor those heroes who have served throughout the ages to defend our freedom.

Be sure to join us to commemorate our veterans during our annual Veterans Day event on Nov. 8, from 10:30-11:30 a.m. If you are not able to participate in person, you can view the event on EPAtv.

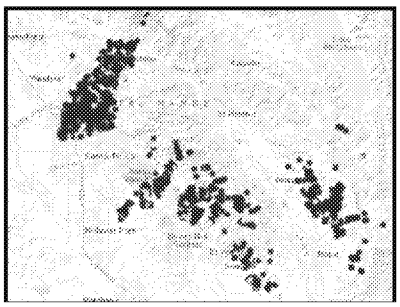
To all veterans and their families, thank you for your courage, your dedication, and your commitment. We salute you for your sacrifices.

Administrator Scott Pruitt

Hot Topics

Story map highlights EPA's wildfires response

EPA continues to work with local, state, and federal partners to respond to the Northern California fires. EPA is leading



the survey, collection, and disposal of household hazardous waste at nearly 7,000 residential and commercial parcels affected by the fires in Sonoma and Napa counties.

The work of agency employees allows other state and federal agencies to remove ash and other non-hazardous debris, so that the rebuilding process in these communities can begin. The story of EPA's response to the Northern California fires is captured on the Northern California Wildfires response site and story map site, which brings the agency's response to life through maps and descriptions.

This story map presents information on several components of the response effort, including the:

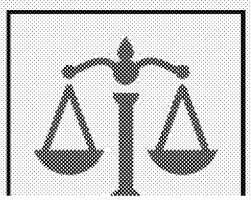
- location of nearly 7,000 affected properties;
  status of EPA's work in Sonoma County; and
- status of EPA's work in Napa County.

Many thanks to the following team members who helped to develop the story map:

- Incident Command Post Situation Unit Leader James Lopez-Baird (Region 10) and Environmental Unit Leader Karl Banks (Region 9)
- Public Information Officers Bill Glenn, Rusty Harris-Bishop and Kelly Zito (Region 9), and Mark MacIntyre (Region 10)
- ICP Deputy Incident Commander Marty McComb (Region 8) and Incident Commander Steve Calanog (Region 9); and
- EPA's On-Scene Coordinators, Community Involvement Coordinators, and the multitude of Response Support Corps staff who dedicated themselves to supporting the North Bay communities in their recovery efforts.

Two Clean Air Act settlements announced

On Oct. 31, EPA, the U.S. Department of Justice, and the states of Colorado and Louisiana announced two important



Clean Air Act settlements - one with ExxonMobil and one with PDC Energy - that will reduce emissions of harmful air pollution and improve the companies' compliance with the law.

ExxonMobil will install and operate air pollution control and monitoring technology to reduce emissions of volatile organic compounds (VOC) and benzene at five petrochemical manufacturing facilities in Texas and three in Louisiana. PDC Energy will improve operations and maintenance practices, monitoring, and inspections to reduce VOC emissions from its oil and gas exploration and production activities in the Denver area.

New facilitation and mediation resources

Have you ever wished that a facilitator could magically appear to rescue you (and your colleagues) from a painful

meeting?

At EPA we regularly use facilitation and mediation to support better communication and decision-making in a variety of situations. We use them to manage workplace conflict, create LEAN work processes, mediate complex environmental conflicts, facilitate public involvement, and make our meetings more effective. Still, many at EPA don't know that these services exist or know how to access them.

In order to raise a broader awareness of these services, the agency has added new resources to the One EPA Workplace site, including a brief whiteboard video. These allow you to learn more about facilitation and mediation, locate services around the agency, and better understand how these services are used to support EPA's work to protect human health and the environment. Check them out and spread the word.

Excellence and innovation recognized in clean water infrastructure

Last week, within the Office of Water's (OW) Clean Water State Revolving Fund (SRF), the Performance and Innovation in the SRF Creating Environmental Success (PISCES) program recognized 28 water quality treatment projects for excellence and innovation. Honored projects include large wastewater infrastructure projects to small decentralized and agriculture projects.

The CWSRF is a federal-state partnership that provides communities a permanent, independent source of low-cost financing for a wide range of water quality infrastructure projects. Over the past 30 years, CWSRF programs have provided more than $125 billion in financing for water quality infrastructure.

The PISCES program recognized projects by state or local governments, public utilities, and private entities across three categories: Exceptional; Honorable Mention; and Recognized Excellence. The Exceptional projects were:

- Arkansas: Sewer Service Line Replacement Program - Little Rock Wastewater Utility
- Delaware: NVF Yorklyn Site Wetland Project - DNREC Parks & WHS
- Ohio: Howard Storage Basin-North Hill Separation Project - City of Akron
- Rhode Island: RIAC Glycol Recovery System - RI Airport Corporation
- Washington: On-Site Sewage System Loan Program - Tacoma-Pierce County Health Department

To see the full list of 2017 awardees and to learn more about these projects, please see the PISCES website.

Native American Heritage Month observance

Please join the Federal Triangle Partnership as we celebrate Native American Heritage Month on Thursday, Nov. 16, from

10-11 a.m. EST, in the Department of Commerce Auditorium (1401 Constitution Avenue NW, Washington, DC) or via

EPAtv.

This year's theme is "Standing Together." We are honored to have as our keynote speaker Spike Bighorn, who currently serves as the Associate Deputy Director of the Office of Indian Services for the Bureau of Indian Affairs.

Two remote viewing possibilities:

1. EPAtv broadcast Nov. 16, at 2 p.m. EST.
   Please remember that EPAtv broadcasts are available using only Internet Explorer while on the EPA network and cannot be accessed remotely.
2. EPAtv On-demand posting after 12 p.m. EST, on Nov. 17.
   This is the expected time of availability, but it is subject to change.

People needing reasonable accommodations should contact Kristin P. Tropp at (202) 559-0006.

This event is hosted by the Federal Triangle Partnership, consisting of four federal agencies: Department of Commerce, Agency for International Development, Customs and Border Protection, and EPA.

Please see the agency calendar entry for full details on this event. ADD TO CALENDAR We look forward to seeing you there.

Key Dates

EPA Calendar

Click on each event below to get more details.
Click on the "Add to Calendar" button to add an event to your Outlook calendar.
If you see a log-in screen, please click on your EPA email, or if prompted, enter your email and network password.

Happening This Week:

Nov. 7: Bloomberg BNA Training: Environment & Energy Report ADD TO CALENDAR

Nov. 8: Lotus Notes Migration Preparation Day ADD TO CALENDAR

Nov. 8: Veteran's Day celebration ADD TO CALENDAR

Coming Soon:

Nov. 13: FEHB Open Season (Nov. 13 to Dec. 11) ADD TO CALENDAR

Nov. 15: 508 compliance class: Introduction to Accessible PDFs ADD TO CALENDAR

Nov. 16: Native American Heritage Month event ADD TO CALENDAR

Nov. 28: Bloomberg BNA Training: Environment & Energy Report ADD TO CALENDAR

Video Spotlight

Ensuring Independence, Geographic Diversity & Integrity in EPA Science Committees

Administrator Scott Pruitt issued a new directive to ensure the independence, integrity, and geographic diversity of EPA Federal Advisory Committee (FAC) members. The directive includes the requirement that no member of any of EPA's federal advisory committees be currently in receipt of EPA grants, either as principal investigator or co-investigator, or in a position that otherwise would reap substantial direct benefit from an EPA grant.

The Administrator subsequently announced his plan to appoint highly qualified experts and scientists to serve on three FACS: the Board of Scientific Counselors (BOSC), the Clean Air Science Advisory Committee (CASAC), and the Science Advisory Board (SAB). Experts throughout the environmental stakeholder community will be appointed, including from NGOs, academia, industry, and state, tribal and local officials.

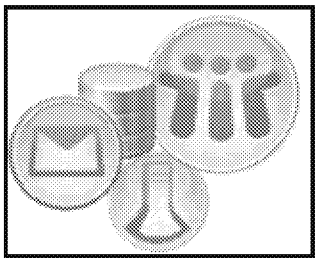
Video length: 26:32

Health & Wellness

Diabetes Awareness Month

IT Corner

Lotus Notes Migration Preparation Day is Nov. 8



The Office of Environmental Information (OEI) has designated Nov. 8 as **Lotus Notes Migration Preparation Day**. In preparation for the termination of agency-wide access to Lotus Notes, OEI encourages employees to take advantage of this designated day to review and clean up their Lotus Notes mailboxes.

With some exceptions, employees will not be able to access their email from within Lotus Notes after Dec. 31, 2017. In calendar year 2018, OEI will begin migrating employees' Lotus Notes emails dating from January 2007 or later into an Outlook archive folder, where each employee will be able to access them easily. Email generated before Jan. 1, 2007, will not migrate, except those required for litigation hold or other preservation obligations.

OEI is coordinating with programs and regions to ensure that people who need access to Lotus Notes databases and other applications after Dec. 31, 2017, can do so. Be sure to read the Lotus Notes Migration Preparation Day news post to get more details and resource links about specific aspects of the migration.

Diabetes is a chronic disease characterized by elevated blood glucose levels, which increases the risk of developing heart disease or having a stroke. According to the Centers for Disease Control and Prevention, more than 29 million Americans are currently living with diabetes, and 8 million of these cases are undiagnosed.

Visit the American Diabetes Association website to take an online diabetes risk assessment. If you score "at risk" for diabetes, follow up with your personal physician for a blood glucose screening. You should also visit your personal physician at least once a year to monitor your health.

Everyone can take the following steps to prevent diabetes:

- Eat a healthy, balanced diet.
- Stay physically active.
- Maintain a healthy weight.
- Get regular blood glucose screenings.

For more information, visit the Diabetes page on the EPA's Health and Wellness site.

Message

From: Beck, Nancy [Beck.Nancy@epa.gov]
Sent: 11/4/2017 5:14:55 PM
To: Jackson, Ryan [jackson.ryan@epa.gov]
CC: Baptist, Erik [baptist.erik@epa.gov]; Sands, Jeffrey [sands.jeffrey@epa.gov]; Dourson, Michael [dourson.michael@epa.gov]
Subject: Objections
Attachments: EPA_Objections 6 5 17.pdf

Ryan,
Attached are the objections we discussed yesterday. The actual objections begin on page 25.

Nancy

****

Nancy B. Beck, Ph.D., DABT
Deputy Assistant Administrator
Office of Chemical Safety and Pollution Prevention
P: 202-564-1273
M: Ex. 6
beck.nancy@epa.gov

Objections to March 29, 2017 Order Denying PAN/NRDC Petition to Revoke All Tolerances and Cancel All Registrations for the Pesticide Chlorpyrifos

Submitted by:

Earthjustice

Objectors:

Pesticide Action Network

Natural Resources Defense Council

United Farm Workers

California Rural Legal Assistance Foundation

Farmworker Association of Florida

Farmworker Justice

GreenLatinos

Labor Council for Latin American Advancement

League of United Latin American Citizens

Learning Disabilities Association of America

National Hispanic Medical Association

Pineros y Campesinos Unidos del Noroeste

June 5, 2017

Docket No. EPA-HQ-OPP-2007-1005

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OBJECTIONS TO MARCH 29, 2017 ORDER DENYING PAN/NRDC PETITION TO REVOKE ALL TOLERANCES AND CANCEL ALL REGISTRATIONS FOR THE PESTICIDE CHLORPYRIFOS

INTRODUCTION AND SUMMARY

These objections seek: (1) reversal of the Environmental Protection Agency's ("EPA's") March 29, 2017 Order denying a 2007 petition to revoke all food tolerances for chlorpyrifos, a neurotoxic pesticide; and (2) an immediate final order revoking all chlorpyrifos tolerances. These objections are filed on behalf of Pesticide Action Network ("PAN"), Natural Resources Defense Council ("NRDC"), United Farm Workers, California Rural Legal Assistance Foundation, Farmworker Association of Florida, Farmworker Justice, GreenLatinos, Labor Council for Latin American Advancement, League of United Latin American Citizens, Learning Disabilities Association of America, National Hispanic Medical Association, and Pineros y Campesinos Unidos del Noroeste, by Earthjustice (collectively "Objectors").

PAN and NRDC filed the petition in 2007 asking EPA to revoke chlorpyrifos food tolerances and cancel all food uses of the pesticide. Petition to Revoke All Tolerances and Cancel All Registrations for the Pesticide Chlorpyrifos (Sept. 12, 2017) ("2007 Petition") (EPA-HQ-OPP-2007-1005-0005). The 2007 Petition sought action by EPA on two critical issues left unaddressed when EPA re-registered chlorpyrifos in 2001 and 2006: (1) the growing scientific evidence that chlorpyrifos causes damage to children's brains from prenatal and early childhood exposures and that it does so at lower exposure levels than what EPA used in re-registering chlorpyrifos; and (2) harmful exposures to chlorpyrifos from pesticide drift and volatilization, which EPA never addressed in re-registering chlorpyrifos, despite numerous reported pesticide poisonings from chlorpyrifos every year and air monitoring detecting chlorpyrifos in school yards and residential neighborhoods in harmful amounts.

PAN and NRDC filed the 2007 Petition under the Federal Food, Drug and Cosmetic Act ("FFDCA"), which prescribes the required procedural and substantive outcomes. Procedurally, EPA may issue a proposed or final rule revoking the tolerances or an order denying the petition. 21 U.S.C. § 346a(d)(4)(A). Substantively, the FFDCA makes food safety the highest priority and constrains EPA's discretion accordingly. EPA may leave a tolerance in effect for a pesticide "only if the Administrator determines the tolerance is safe." *Id.* § 346a(b)(2)(A)(i). Conversely, the Administrator "shall modify or revoke a tolerance if the Administrator determines it is not safe." *Id.* The Act further constrains EPA by defining "safe" to mean that "the Administrator has determined that there is a reasonable certainty that no harm will result from aggregate exposure" to the pesticide. *Id.* § 346a(b)(2)(A)(ii).

As early as 2000, EPA noted that laboratory studies consistently showed that the developing brain can be harmed by low-level exposures to chlorpyrifos.[1] When EPA began to review the studies correlating chlorpyrifos exposures with damage to children's brains in response to the 2007 Petition, it found such a correlation. It submitted its analysis to EPA's

[1] EPA, Human Health Risk Assessment: Chlorpyrifos (June 8, 2000) at 131 ("Results of multiple studies have consistently shown that the developing brain is susceptible to chlorpyrifos treatment.").

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Scientific Advisory Panel ("SAP") on multiple occasions beginning in 2008, and each time, the SAP confirmed EPA's conclusion that early life exposures to chlorpyrifos pose a risk of long-lasting, adverse cognitive, behavioral, and motor impairments. And both EPA and the SAP found that the exposures associated with serious damage to children's brains were far below the regulatory endpoint used by EPA in its 2001 and 2006 re-registration determinations and in establishing the chlorpyrifos tolerances currently in effect. *See infra* at 14-16.

These reviews culminated in EPA's official finding in its revised human health risk assessment, released in 2014, that chlorpyrifos causes long-lasting damage to children's brains at exposures lower than EPA's regulatory endpoint. *See infra* at 16-17. The 2014 risk assessment also documented unsafe chlorpyrifos exposures from drinking water contamination. In 2015, EPA proposed to revoke all chlorpyrifos tolerances based on these findings. 80 Fed. Reg. 69,080 (Nov. 6, 2015). In the proposed revocation rule, EPA explicitly and repeatedly found chlorpyrifos unsafe. *Id.* at 69,081-083, 69,097, 69,103, 69,105-106.

At the same time, the proposed revocation rule noted that EPA's 2014 risk assessment was under-protective in a fundamental way. EPA had not changed its regulatory endpoint, which continued to be based on poisoning risks, even though lower chlorpyrifos exposures caused brain impairments. EPA recognized that its 2014 risk assessment and 2015 proposed tolerance revocation did not address the greatest risks and most sensitive endpoint, as EPA policy requires.

EPA, therefore, continued to explore ways to establish an exposure limit that would protect children from neurodevelopmental harm. Each method it explored revealed more serious risks from chlorpyrifos than the 2014 risk assessment. In November 2016, EPA released its second revised human health risk assessment using a regulatory endpoint designed to guard against damage to children's brains. That risk assessment found unsafe exposures from every way that people come into contact with chlorpyrifos —on food, in drinking water, through pesticide drift, and from applying the pesticide or working in fields that had recently been sprayed.[2] EPA indicated it had found no chlorpyrifos uses that meet the FFDCA safety standard and all chlorpyrifos tolerances would need to be revoked. 81 Fed. Reg. 81,049, 81,050 (Nov. 17, 2016).

While the FFDCA does not establish a timeline for resolving petitions to revoke tolerances, EPA, like all federal agencies, must respond to administrative petitions "within a reasonable time." 5 U.S.C. § 555(b). EPA fell far short of this obligation with respect to the 2007 Petition to ban all food uses of chlorpyrifos. In 2015, the Ninth Circuit Court of Appeals found EPA guilty of "egregious" unreasonable delay and issued a writ of mandamus setting deadlines for EPA to take action. *In re PANNA v. EPA*, 798 F.3d 809, 811 (9th Cir. 2015). When EPA found that chlorpyrifos poses such serious risks that a nationwide ban was warranted, the court became persuaded that the time for study had passed and the time for action had arrived. *Id.* at 814. The court gave EPA a March 31, 2017 deadline to take final action on the 2007 Petition.

Something changed as that deadline approached, but it was neither the science, nor the legal mandates. A newly inaugurated President appointed a new EPA Administrator, Mr. Scott

[2] Chlorpyrifos: Revised Human Health Risk Assessment for Registration Review (Nov. 3, 2016) (EPA-HQ-OPP-2015-0653-0454).

Pruitt, and it fell to him to meet the court-ordered March 31, 2017 deadline. Administrator Pruitt chose not to finalize the revocation order, even though he could not make the safety findings required to keep chlorpyrifos in place. He decided to put off regulatory action. He issued an order on March 29, 2017, denominated "Chlorpyrifos: Order denying PANNA and NRDC's petition to revoke tolerances." 82 Fed. Reg. 16,581 (Apr. 5, 2017) ("Pruitt Order"). That Order, however, did not determine that the 2007 Petition should or could be denied on its merits. Nor did it make the safety findings required by law to take that course of action. Instead, the Pruitt Order postpones taking final action on the proposed tolerance revocation rule until some unspecified future time that could be five or more years off.

Such a postponement violates the FFDCA's substantive mandates. It leaves chlorpyrifos tolerances in place, but EPA has the authority to do so *only if* it finds chlorpyrifos safe. EPA has, however, repeatedly found chlorpyrifos to be unsafe. Under the FFDCA, EPA must revoke tolerances if it determines the tolerances unsafe. Revoking all chlorpyrifos tolerances is the only legally and scientifically defensible course of action. These objections ask EPA to rule on these objections within 60 days and revoke all chlorpyrifos on an expeditious basis.

PRELIMINARY MATTERS

I. NO FEE REQUIRED

Counsel for Objectors spoke with EPA's Office of General Counsel on June 1, 2017, and was informed that the fee described in 40 CFR 178.25(a)(5) is not required because EPA is prohibited from collecting such fees at this time. *See* 21 U.S.C. § 346a(m)(3) ("PROHIBITION. During the period beginning on October 1, 2007, and ending on September 30, 2017, the Administrator shall not collect any tolerance fees under paragraph (1)."). Therefore, no fee accompanies these objections.

II. THE ADMINISTRATIVE RECORD

Since completing re-registration of chlorpyrifos in 2006, EPA has engaged in extensive reviews and a rulemaking process regarding chlorpyrifos registrations and tolerances and has established three related dockets. The first docket, EPA-HQ-OPP-2007-1005, was opened in response to the 2007 Petition. The second docket, EPA-HQ-OPP-2008-0850, was opened when EPA began the registration review process for chlorpyrifos. The third docket, EPA-HQ-OPP-2015-0653, was opened when EPA initiated the tolerance revocation process after determining that chlorpyrifos was unsafe. EPA cites all three dockets as being relevant to its denial decision. 82 Fed. Reg. 16,581, 16,582 (Mar. 29, 2017). As such, all three dockets must be considered part of the administrative record for reviewing these objections to EPA's denial of the 2007 Petition.

In September 2016, many of the Objectors filed a Petition for Emergency and Ordinary Suspension of Chlorpyrifos Uses that Pose Unacceptable Risks to Workers and Petition to Cancel All Uses of Chlorpyrifos. After EPA released a revised human health risk assessment in November 2016 finding all food uses of chlorpyrifos unsafe, these groups withdrew the portion of the petition seeking an immediate suspension of chlorpyrifos uses that pose unacceptable risks to workers because revocation of chlorpyrifos food tolerances seemed inevitable and would end the uses and the associated harm to workers. The portion of the petition seeking cancellation of chlorpyrifos uses remains before EPA. EPA never opened a docket for the suspension and

cancellation petition, but the petition and supporting declaration and exhibits were submitted through comments to docket EPA-HQ-OPP-2015-0653 and are part of the record.[3]

Additionally, the administrative record must include all communications regarding chlorpyrifos between EPA (including the post-2016 election transition and beachhead teams) and Dow Agrosciences, CropLife America, the U.S. Department of Agriculture, and any other entity or agency that communicated with EPA outside of the public comment process.[4] *See, e.g., Bar MK Ranches v. Yuetter*, 994 F.2d 735, 739 (10th Cir. 1993) ("The complete administrative record consists of all documents and materials directly or indirectly considered by the agency").

III. NO EVIDENTIARY HEARING IS NEEDED IN LIGHT OF THE PURLEY SCIENTIFIC ISSUES RAISED IN THESE OBJECTIONS

The Objectors do not seek an evidentiary hearing because these objections present purely legal issues, namely whether EPA can leave chlorpyrifos tolerances in place when it has found chlorpyrifos unsafe. The FFDCA requires EPA to revoke chlorpyrifos tolerances in these circumstances and no evidentiary hearing is needed to do so.

BACKGROUND

I. THE LEGAL FRAMEWORK REQUIRES PROTECTION, PARTICULARLY OF CHILDREN, FROM HARMFUL PESTICIDES

A. The FFDCA Mandates Elimination of Harmful Pesticides From Our Food Supply

EPA regulates allowable contaminants, including pesticides, in our food supply under the FFDCA. For a pesticide to be permitted on food and imported or sold in interstate commerce, EPA must issue a tolerance that establishes the maximum residue of a pesticide allowed on food. 21 U.S.C. § 346a(b) & (c). EPA may "establish or leave in effect a tolerance for a pesticide chemical residue in or on a food only if the Administrator determines that the tolerance is safe." *Id.* § 346a(b)(2)(A)(i).

The Food Quality Protection Act ("FQPA"), passed unanimously in 1996, amended the FFDCA to require that EPA "ensure that there is a reasonable certainty that no harm will result to infants and children from aggregate exposure" to pesticides. 21 U.S.C. § 346a(b)(2)(C)(ii)(I), (II).

---

[3] Earthjustice, *et al.*, Comments on EPA Proposal to Revoke Chlorpyrifos Tolerances (Jan. 17, 2017) (EPA-HQ-OPP-2015-0653-0661). The Petition for Emergency and Ordinary Suspension of Chlorpyrifos Uses that Pose Unacceptable Risks to Workers and Petition to Cancel All Uses of Chlorpyrifos and the Declaration of Philip J. Landrigan, M.D., M.Sc. in Support of Petition to Suspend and Cancel Chlorpyrifos Uses were submitted as attachments to these comments.

[4] Earthjustice, on behalf of PAN, submitted a Freedom of Information Act ("FOIA") request to EPA for these documents on March 15, 2017. EPA failed to substantively respond to that request within the statutory timeline, and to date has not released any documents related to PAN's FOIA request. On May 10, 2017, PAN filed a FOIA lawsuit against EPA seeking production of the requested records. *Pesticide Action Network of North America v. U.S. Environmental Protection Agency*, 3:17-cv-02706-SK (N.D. Cal. filed May 10, 2017).

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The 1996 passage of the FQPA responded to a seminal 1993 National Academy of Sciences ("NAS") report criticizing EPA for regulating pesticides based on the effects on a 150-pound adult male.[5] It documented the ways that children are not "little adults" but have unique exposures from the foods they eat, their play, and their metabolism. For example, a 6-month old child drinks seven times more per body weight than an adult, inhales twice as much air, and puts its hands in its mouth more than is common later in life. The report also highlighted the windows of vulnerability — *in utero*, infancy, and adolescence — where children are particularly susceptible to the impacts of chemicals on their development. Chemical exposures can damage the developing brain at exposures less than those that affect adults.

The NAS recommended that EPA revamp and strengthen its regulation of pesticides to account for children's vulnerabilities, consumption patterns, and exposures. Because it would take time to fill gaps in knowledge, safeguards and methodologies, the NAS recommended that additional protection be afforded in the form of "uncertainty" or "safety factors." The NAS first described how EPA has regularly used uncertainty factors and then proposed an additional uncertainty factor for toxicity to infants and children and where data are incomplete on such toxicity or on children's exposures:

> In the absence of data to the contrary, there should be a presumption of greater toxicity to infants and children. To validate this presumption, the sensitivity of mature and immature individuals should be studied systematically to expand the current limited data base on relative sensitivity.

NAS Report at 9-10.

Heeding the NAS recommendations, the FQPA directs EPA to afford added protection to children based on their exposure patterns, their special sensitivities, such as during early or adolescent development, and gaps in available data to assess such risks. 21 U.S.C. § 346a(b)(2)(C)-(D). The statute explicitly requires EPA to assess the risk that a pesticide poses particularly to infants and children. 21 U.S.C. § 346a(b)(2)(C). Before EPA can establish a tolerance, the agency shall "ensure that there is a reasonable certainty that no harm will result to infants and children from aggregate exposure" to the pesticide, and shall "publish a specific determination regarding the safety of the pesticide chemical residue for infants and children." *Id.* §§ 346a(b)(2)(C)(ii)(I) & (II). In ensuring that the statutory safety standard is met, EPA must consider available information concerning "the special susceptibility of infants and children," including "neurological differences between infants and children and adults, and effects of in utero exposure to pesticide chemicals." *Id.* § 346a(b)(2)(C)(i)(II). EPA must also base its tolerance decision on available information about "food consumption patterns unique to infants and children." *Id.* §§ 346a(b)(2)(C)(i)(I) & (III).

One of the FQPA's key provisions is the requirement that EPA use an additional margin of safety to protect infants and children when establishing tolerances. The statute requires that: "an additional tenfold margin of safety for the pesticide chemical residue and other sources of exposure shall be applied for infants and children to take into account potential pre -and post-

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[5] National Research Council, *Pesticides: Diets of Infants and Children* (1993) ("NAS Report"), https://www.nap.edu/catalog/2126/pesticides-in-the-diets-of-infants-and-children.

natal toxicity and completeness of the data with respect to exposure and toxicity to infants and children." 21 U.S.C. § 346a(b)(2)(C). EPA can depart from this requirement and use a different margin of safety "only if, on the basis of reliable data, such margin will be safe for infants and children." *Id.*

In addition, because "[e]xposure to pesticide residues from ambient air sources is generally higher in areas close to agricultural lands," and "[b]ecause infants and children are subject to nondietary sources of exposure to pesticides," the NAS found that "it is important to consider total exposures to pesticides from all sources combined." NAS Report at 307, 309, 319. The FQPA requires EPA to "ensure that there is a reasonable certainty that no harm will result to infants and children *from aggregate exposure*" to a pesticide from all sources. 21 U.S.C. § 346a(b)(2)(C)(ii)(I), (II) (emphasis added). "Aggregate exposure" includes "all anticipated dietary exposures and all other exposures for which there is reliable information," including pesticide drift exposures. 21 U.S.C. § 346a(b)(2)(A)(ii); *see also id.* § 346a(b)(2)(D)(vi). The FQPA, therefore, requires an assessment based on aggregation of all exposures to a pesticide whether from eating foods, drinking water with residues of the pesticide, or contacting pesticide residues in and around the home or other places where people can be exposed. *Id.* § 346a(b)(2)(A)(ii), (C)(i)(I), (D)(vi). The FQPA also requires EPA to assess and protect against unsafe risks posed by cumulative exposures to all pesticides that share a "common mechanism of toxicity," as is the case with pesticides in the organophosphate family. *See id.* § 346a(b)(2)(C)(i)(III)-(D)(v).

B. Pesticide Use on Food Crops Is Regulated Under Overlapping Provisions of the Federal Insecticide, Rodenticide and Fungicide Act

EPA regulates use of pesticides in the United States under the Federal Insecticide, Rodenticide and Fungicide Act ("FIFRA"). Under FIFRA, EPA must establish a registration before a pesticide may generally be sold or used in the United States. 7 U.S.C. § 136a(a). To register or re-register a pesticide, EPA must determine that its use "will not generally cause unreasonable adverse effects on the environment," which includes risks to human health. *Id.* § 136a(c)(5)(D); *see id.* § 136(bb) (definition of "unreasonable adverse effects"). EPA has the authority to cancel a pesticide registration if the pesticide use "causes unreasonable adverse effects on the environment." *Id.* § 136d(b).

The two statutes' safety standards are intertwined through FIFRA's definition of "unreasonable adverse effects," which includes "a human dietary risk from residues that result from a use of a pesticide in or on any food inconsistent with the [FQPA] standard." 7 U.S.C. § 136(bb)(2). In other words, a pesticide may not be registered for a food use unless a food tolerance is in place, and whenever a food tolerance is revoked, the registration for use of the pesticide on that food crop must be cancelled. Because of this interdependence, the FQPA directs EPA to coordinate FQPA actions to revoke tolerances with any related, necessary FIFRA action. 21 U.S.C. § 346a(l).

Congress gave EPA a ten-year deadline, which ended in August 2006, to bring all food-use pesticides into compliance with these protective mandates. 21 U.S.C. § 346a(q)(1). The August 2006 deadline applied to both tolerances established under the FFDCA, as amended by the FQPA, and re-registration decisions under FIFRA.

To ensure that pesticides in use in the United States continue to meet the FQPA and FIFRA standards in light of the development of scientific methodologies and available scientific information on health effects and exposures, Congress required periodic review of pesticides every 15 years, but provided: "Nothing in this subsection shall prohibit the Administrator from undertaking any other review of a pesticide …." 7 U.S.C. § 136a(g) and § 136a(g)(1)(C). The first round of registration reviews of older pesticides, which includes chlorpyrifos, must be completed by October 1, 2022. *Id.* § 136a(g)(1)(A)(iii)(I).

II. EPA'S RE-REGISTRATION OF CHLORPYRIFOS

A. Chlorpyrifos

Chlorpyrifos is a widely used organophosphate pesticide first registered by EPA in 1965. It is used on an extensive variety of crops, including fruit and nut trees, vegetables, wheat, alfalfa, and corn. In 2006-2012, chlorpyrifos was applied to more than half of the country's apple and broccoli crops, 45% of onion, 46% of walnut, and 41% of cauliflower crops.[6] Five to eight million pounds are used annually in agriculture, including one million pounds on both corn and soybeans.[7]

Organophosphate chemicals were developed as nerve agents in World War II and adapted for use as insecticides after the war. They have deleterious effects on people who come into contact with them when they are used as insecticides.

Chlorpyrifos is acutely toxic and causes a significant number of acute pesticide poisoning incidents every year. Chlorpyrifos and other organophosphate pesticides do this by suppressing the activity of an enzyme called acetylcholinesterase, which regulates nerve impulses throughout the body. When cholinesterase activity is inhibited, nerves are over-stimulated, causing people to experience symptoms such as headaches, nausea, abdominal cramps, dizziness, difficulty breathing, vomiting, diarrhea, tremors, muscle spasms, seizures, skin rashes, and sometimes convulsions, respiratory paralysis, comas, and even death in extreme cases.

Widespread use of chlorpyrifos has exposed people through the air, in drinking water, and through the foods they eat. Monitoring by the California Department of Pesticide Regulation showed chlorpyrifos as having one of the highest number of detections in its 2011-2015 air monitoring, and water monitoring detected chlorpyrifos in 17.7% of samples, with 9.9%

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[6] EPA, Chlorpyrifos Evaluation of the Potential Risks from Spray Drift and the Impact of Potential Risk Reduction Measures at 7 & Appendix C (July 13, 2012) (EPA-HQ-OPP-2008-0850-0105).
[7] *Id.*

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exceeding the state's concentration limit.[8] In 2015, 61% of the air samples taken at a high school detected chlorpyrifos.[9]

In addition to poisonings, a growing body of published scientific research from both animal and epidemiology studies links exposure to chlorpyrifos with causing neurodevelopmental harm to children's brains. Children's brains are particularly vulnerable to damage from low-dose exposures because the placenta is not a barrier to passage of many toxic chemicals, including chlorpyrifos, from the mother to the fetus. An extensive body of published animal studies reveals cognitive, motor control, and social behavior impacts from chlorpyrifos exposures.

Additional evidence of neurodevelopmental harm from chlorpyrifos has come from three population cohorts that were studied by university research teams as part of the NIH-funded network of Centers for Children's Environmental Health. A research team at University of California-Berkeley followed a cohort of children born to farmworkers in Salinas Valley in California. A Mount Sinai School of Medicine study observed a New York City Hispanic population. A research team at Columbia University followed African American and Dominican children in New York City. The three studies each enrolled pregnant women and conducted long-term birth-cohort studies. Even though the studies were conducted in different parts of the country on different populations with different types of exposures, they produced strongly convergent results. All found that prenatal exposures to pesticides were statistically significantly correlated with cognitive impairments that persist into the school years, and the Columbia study was specific to chlorpyrifos. Prenatal exposures correlate with lasting functional harm to children's brains in the form of reduced IQ, loss of working memory, attention deficit disorders, and delayed motor development. Chlorpyrifos also has been found to cause physical changes in brain structure that may have long-lasting effects. Children living near agricultural fields suffer disproportionately from these effects. The Declaration of Philip J. Landrigan, M.D., M.Sc., who led the 1993 study that produced the NAS Report, describes the lines of evidence documenting damage to children's developing brains from chlorpyrifos and the other organophosphates (attached as Exhibit 1).

B. EPA's Re-registration Determinations for Chlorpyrifos

EPA used a two-part process for re-registering chlorpyrifos and the other organophosphate pesticides. First, it conducted risk assessments and made interim re-registration determinations for the individual organophosphates, which it did in 2001 for chlorpyrifos. Second, it conducted a cumulative risk assessment of all the organophosphates,

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[8] Vidrio, E., Wofford, P., Segawa, R., Schreider, J. March 2013. Air Monitoring Network Results for 2011. Vol. 1. California Environmental Protection Agency, Department of Pesticide Regulation, http://www.cdpr.ca.gov/docs/emon/airinit/amn_vol1_final.pdf; and Zhang X., Starner K., Spurlock F. 2012. Analysis of Chlorpyrifos Agricultural Use in Regions of Frequent Surface Water Detections in California, USA . California Department of Pesticide Regulation, Environmental Monitoring Branch, Surface Water Protection Program. http://www.cdpr.ca.gov/docs/emon/pubs/ehapreps/analysis_memos/zhang_chlorpyrifos_report.pdf.

[9] http://www.cdpr.ca.gov/docs/emon/airinit/amn_2015_report_final.pdf (Shafter High School).

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which it completed in 2006. The cumulative risk assessment did not result in changes in the interim re-registration and tolerance determinations for chlorpyrifos.

In its risk assessment for chlorpyrifos (as with the other organophosphates), EPA identified a level of 10% cholinesterase inhibition in red blood cells as the endpoint it would use in determining whether chlorpyrifos exposures violate the regulatory standards. In assessing risks from aggregate exposures to chlorpyrifos, EPA determined that home uses had to be cancelled. Children crawling on treated carpets and hugging pets after flea treatments faced unsafe exposures. Seeing the writing on the wall, the chemical makers agreed to cancel homeowner uses of chlorpyrifos in 2000.

EPA, however, never assessed the extent to which children in agricultural communities are exposed to chlorpyrifos through drift from agricultural sites to schools, day cares, playfields, and homes, or through residues their parents take home on their clothes. The failure to assess risks to and protect children in farmworker communities, who are primarily Latino and low-income, evinced a double standard that raises serious environmental justice concerns.

Nor did EPA protect the fetus and young children from neurodevelopmental harm, despite acknowledging in its 2000 human health risk assessment for chlorpyrifos that the fetus and young children are more sensitive to chlorpyrifos and that multiple studies consistently showed that the developing brain can be harmed by chlorpyrifos exposures.[10]

PAN, NRDC, and others commented on EPA's 2001 interim re-registration determination for chlorpyrifos, urging EPA to address pesticide drift and the mounting evidence of neuro-developmental impacts to children at low doses. The New York Attorney General also submitted comments emphasizing that the interim re-registration determination underestimated the risks of chlorpyrifos, particularly to children, and failed to make a finding that the pesticide is "safe" and complied with the FQPA.[11] The comments cited studies that suggested "that there is *no* level of exposure to chlorpyrifos that is without adverse effects on developmental neurotoxicity in the young…."[12] In 2006, after releasing its cumulative organophosphate risk assessment, EPA finalized its re-registration of chlorpyrifos without protecting children from drift or neurodevelopmental harm from chlorpyrifos and without addressing the public comments.

III. ADVOCACY TO CONVINCE EPA TO PROTECT CHILDREN FROM DRIFT AND NEURODEVELOPMENTAL HARM FROM CHLORPYRIFOS EXPOSURES

Farmworker and health advocates pursued three legal avenues to rectify EPA's failure to

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[10] *See* NRDC Comments on Chlorpyrifos Interim Reregistration Decision (Jan. 14, 2002) (Docket ID No. OPP-34203G), attached Exhibit 2, (citing Human Health Risk Assessment - Chlorpyrifos (June 8, 2000), *available at https://archive.epa.gov/scipoly/sap/meetings/web/pdf/hed_ra.pdf*).

[11] Attorney General of the State of New York, comments on Chlorpyrifos Interim Reregistration Eligibility Decision and Interim Risk Management Decision pursuant to 66 Fed. Reg. 57,073-074 (Nov. 14, 2001) at 2, attached Exhibit 3.

[12] *Id.* at 19.

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protect children from the hazards posed by chlorpyrifos. First, UFW, PAN, PCUN, and others, represented by Earthjustice and Farmworker Justice filed a federal district court challenge to the 2001 chlorpyrifos interim re-registration decision, in part, for failing to protect children and other bystanders from pesticide drift and failing to cancel uses that expose workers to admittedly excessive poisoning risks.[13] The parties negotiated principles on which the case could be settled with an EPA commitment to make a new regulatory decision for chlorpyrifos by 2010 that would address drift exposures to children and other bystanders. However, after the Ninth Circuit ruled in a case of first impression that challenges to FIFRA registration determinations must be brought in the courts of appeals within 60 days of the decision, the settlement fell apart.[14]

Second, PAN, UFW, PCUN, California Rural Legal Assistance Foundation, and others, represented by Earthjustice, and Farmworker Justice, petitioned EPA to address pesticide drift as mandated by the FQPA.[15] The Kids' Petition highlighted EPA's violation of its legal duty to protect children from all aggregate exposures to each pesticide in tolerance and re-registration determinations and asked EPA to expedite adoption of mitigation for airborne routes of exposure to organophosphates and n-methyl carbamates, another pesticide that suppresses cholinesterase, because of the heightened poisoning risks posed by these classes of pesticides. In March 2014, EPA responded to the petition, acknowledging its legal obligation to address pesticide drift under the FQPA and FIFRA. However, EPA indicated it would not protect children from drift until it reviewed pesticide registrations and tolerance decisions individually in registration review, and it refused to impose interim protections.[16] The petitioners filed administrative objections, which have not been resolved.[17]

Third, on September 12, 2007, PAN and NRDC submitted a petition asking EPA to ban chlorpyrifos based on the mounting evidence of risks from chlorpyrifos that were left unaddressed in EPA's 2001 and 2006 regulatory decisions. At its heart, the 2007 Petition raised two issues:

1. The 2007 Petition (at 17-21) challenged EPA's failure to account for risks to children and bystanders from chlorpyrifos drift and volatilization, as required by the FQPA. In support of this obligation, the petition presented the California Air Resources Board's air monitoring reports and data, which documented concentrations above EPA's levels of

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[13] *UFW v. Administrator, EPA*, No. 07-3950-JF (N.D. Cal. filed Aug. 1, 2007).

[14] *UFW v. Administrator*, Stipulation of Voluntary Dismissal, Dkt. 98, No. 07-3950-JF (N.D. Cal. filed April 27, 2010); *see UFW v. Administrator, EPA*, 592 F.3d 1080 (9th Cir. 2010) (challenges to registration decisions must be brought in courts of appeals within 60 days, rather than in district court under a six-year statute of limitations as had previously been the case).

[15] *See* Pesticides In The Air – Kids At Risk: Petition to EPA to Protect Children From Pesticide Drift (October 13, 2009) (the "Kids' Petition") (EPA-HQ-OPP-2009-0825-0002).

[16] Agency Response to Pesticides In The Air – Kids At Risk: Petition to EPA to Protect Children From Pesticide Drift (March 31, 2014) at 2, 32-33 ("Agency Response to Kids' Petition") (EPA-HQ-OPP-2009-0825-0084).

[17] UFW, *et al.*, Written Objections to EPA's Response to Pesticides in the Air – Kids at Risk: Petition to EPA to Protect Children From Pesticide Drift (May 28, 2014). A court challenge to the decision not to impose interim protection was rejected. *PAN v. U.S.E.P.A.*, No. 14-71514 (9th Cir.).

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concern near fields and in schoolyards, and community air monitoring, which showed widespread contamination in multiple locations and over a period of years, including in schoolyards.[18]

2. The 2007 Petition (at 6-9, 11-16) compiled the mounting evidence documenting serious cognitive and behavioral effects from low-dose chlorpyrifos exposures, including peer-reviewed scientific studies showing that children and infants exposed to chlorpyrifos exhibit long-lasting, and possibly permanent, impaired cognitive and behavioral development from early life exposure. The Petition cited concerns raised by members of EPA's Scientific Advisory Panel that EPA had failed to account for scientific evidence showing brain impacts from early life exposures to chlorpyrifos at lower doses than those used by EPA in its regulatory decisions. *Id.* at 13, 22-23.

IV. EPA'S ACTIONS IN RESPONSE TO THE 2007 PETITION

EPA has long recognized that organophosphates generally, and chlorpyrifos in particular, raise significant health issues. For this reason and because it would be reviewing the novel, complex scientific issues raised in the 2007 Petition and developing new scientific methodologies to do so, EPA decided to move up the registration review of chlorpyrifos in order to complete it several years in advance of the 2022 deadline.[19] EPA initiated the chlorpyrifos registration review and projected it would result in proposed regulatory decisions in 2014 and final ones in 2015. Chlorpyrifos Final Work Plan: Registration Review (Sept. 2009). PAN objected to the lengthy timetable, stating that uncertainties with respect to aspects of chlorpyrifos toxicity do not justify delaying action to protect children.[20]

As described above, the 2007 Petition sought a ban on use of chlorpyrifos on food based primarily on the need to protect children: (1) from exposure to chlorpyrifos from drift and volatilization; and (2) from exposures that could harm the developing brain. The petition raised other issues as well, which EPA separated from the two core issues. When faced with unreasonable delay litigation (*see infra*), EPA issued partial denials on various secondary issues, such as delays in completing endocrine disruption studies, cancer risks, that over-reliance on industry studies, and exporting chlorpyrifos to other countries.[21]

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[18] Petition to Revoke All Tolerances and Cancel All Registrations for the Pesticide Chlorpyrifos at 17-21 (September 12, 2007), EPA-HQ-OPP-2007-1005.

[19] Declaration of Jack Housenger, Director of Health Effects Division of EPA's Office of Pesticide Programs ¶ 13, in *In re PANNA*, No. 12-71125 (9th Cir. July 23, 2012).

[20] Pesticide Action Network Comments (May 18, 2009) (EPA-HQ-OPP-2008-0850-0010).

[21] EPA's Partial Response to Chlorpyrifos Petition by NRDC & PANNA, letter from Dr. Steven Bradbury, Director, EPA Office of Pesticide Programs, to Aaron Colangelo and Margaret Reeves, Ph.D (July 16, 2012) (EPA-HQ-OPP-2007-1005-0095); Chlorpyrifos July 2014 Partial Petition Response, letter from Jack E. Housenger, Director, EPA Office of Pesticide Programs, to Aaron Colangelo and Margaret Reeves, Ph.D (July 15, 2014) (EPA-HQ-OPP-2007-1005-0098).

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As to the heart of the petition, EPA engaged in several rounds of scientific review, solicited input from its Scientific Advisory Panel on numerous occasions, and developed methodologies to analyze, quantify, and for drift, to mitigate the risks.

A. Inhalation Exposures through Pesticide Drift and Volatilization

EPA's 2001 re-registration determination for chlorpyrifos ignored exposures through pesticide drift and volatilization on the theory that such exposures were exempted from the FQPA as occupational exposures. In responding to the Kids' Petition and in its preliminary human health risk assessment released in 2011, EPA acknowledged its legal obligation to assess and protect against drift and volatilization as aggregate exposures. Agency Response to Kids' Petition at 2, 32-34; 2011 PHHRA at 71-75. EPA committed to address such exposures in responding to the 2007 Petition and its registration review of chlorpyrifos and other pesticides.

1. EPA Has Appropriately Taken Steps to Reduce Exposures From Spray Drift, But These Steps Fail to Protect Children From Unsafe Exposures to Chlorpyrifos Through Drift

EPA has developed a standard methodology for assessing a pesticide's propensity to drift from the point of application offsite to schools, homes, day cares, playfields, and other places people gather and will be exposed. EPA models inhalation exposures from aerial applications, but for groundboom and airblast applications, it focuses only on dermal exposures when people come into contact with residues deposited on the ground. EPA justifies this omission because current pesticide labels prohibit applying pesticides in a manner that will allow drift to contact people. Public comments objected to this approach because of the extensive evidence that drift is reaching people and causing poisonings, thereby demonstrating that the label prohibition is not preventing harmful spray drift.[22]

EPA applied its standard methodology in assessing chlorpyrifos and found that chlorpyrifos can drift in harmful amounts. To protect children and other bystanders, EPA convinced the registrants to change chlorpyrifos labels by December 2012 to reduce application rates for aerial spraying, change nozzle types and droplet sizes, and impose no-spray buffers around sensitive sites frequented by non-occupational bystanders, especially children. Such sites include "residential lawns, pedestrian sidewalks, outdoor recreational areas such as school grounds, athletic fields, parks and all property associated with buildings occupied by humans for residential or commercial purposes. Sensitive sites include homes, farmworker housing, or other residential buildings, schools, day care centers, nursing homes, and hospitals."[23] The buffers are 10 feet for groundboom spraying, 10 feet for airblast applications, enlarged to 25-50 feet for large volume, medium or coarse droplet applications, and 10-100 feet for aerial spraying.

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[22] Farmworker and Conservation Comments on Chlorpyrifos Revised Human Health Risk Assessment (Apr. 30, 2015) at 47 ("2015 Farmworker Comments") (EPA-HQ-OPP-2008-0850-0848) (citing Centers for Disease Control and Prevention investigation of pesticide drift causing poisonings of 20 workers between 30-350 feet from the application site).

[23] EPA, Chlorpyrifos – Evaluation of the Potential Risks from Spray Drift and the Impact of Potential Risk Reduction Measures (July 13, 2012) at 3.

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In an interim response to the 2007 Petition, EPA stated that it was partially granting the Petition with respect to inhalation exposure risks and was reducing risks from primary spray drift by limiting application rates and imposing buffer zones around sensitive sites adjacent to agricultural applications.[24]

2. EPA Initially Found Harmful Exposures From Volatilization, But Reversed Course Based on Dow Studies That Have Been Heavily Criticized

EPA assessed risks from volatilization in its 2011 Preliminary Human Health Risk Assessment ("2011 PHHRA") based on ambient and application site monitoring. EPA's assessment showed that one-quarter of the acute ambient air concentrations resulted in risks of concern to residential bystanders, as did over half of the acute application site concentrations and most of the short- and intermediate-term application site concentrations.[25]

In 2013, drawing on methods used to assess bystander inhalation risks from fumigant pesticides and recommendations from a December 2009 Scientific Advisory Panel meeting, EPA conducted an assessment of volatilization risks from chlorpyrifos. EPA found that chlorpyrifos applied to fields can volatilize and harm people nearly a mile away (and likely farther): "Given the current available information and the state of the science concerning the volatilization of pesticides, this preliminary risk assessment indicates risks of concern are exceeded for bystanders."[26] EPA identified buffer zones that would be required to reduce off-site concentrations to safe levels. For example, for oranges, the average application rate is so high (greater than 2 pounds of active ingredient/acre) that the maximum buffers would need to be between 1,476 and 4,724 feet and whole field buffers would need to range from 623-2,838 feet, so large that continued use of chlorpyrifos would be infeasible.[27]

EPA subsequently reversed course based on two studies conducted by Dow AgroSciences, which purport to show that people will not experience adverse effects from volatilization exposures. Without submitting the studies to its Scientific Advisory Panel or obtaining other peer review, EPA accepted the studies and found that chlorpyrifos poses no risk of cholinesterase inhibition from volatilization. On July 15, 2014, EPA provided a partial response indicating that EPA will deny the volatilization component of the petition based on the

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[24] Chlorpyrifos Petition – December 2012 Response, letter from Dr. Steven Bradbury, Director, EPA Office of Pesticide Programs, to Aaron Colangelo and Margaret Reeves, Ph.D (Dec. 18, 2012) (EPA-HQ-OPP-2007-1005-0096).

[25] Chlorpyrifos Preliminary Human Health Assessment for Registration Review (June 30, 2011) at 55 (EPA-HQ-OPP-2008-0850-0025).

[26] Chlorpyrifos: Preliminary Evaluation of the Potential Risks from Volatilization (Jan. 31, 2013) at 55 (assessment based on a study that measured the effects of aerosolized chlorpyrifos – the form chlorpyrifos takes when applied as a spray – and not the vapor form it takes after volatilization) (EPA-HQ-OPP-2008-0850-0114).

[27] *Id.* at 32-46.

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Dow studies on chlorpyrifos vapors, as opposed to aerosols, which could have produced the monitoring concerns noted in 2011 and the risks of concern in the 2013 assessment.[28]

Public comments objected to EPA's use of the Dow studies without subjecting them to peer review. 2015 Farmworker Comments at 32-33. Comments explained that the Dow studies ignored the effects of temperature, soil moisture, and individual variation and submitted biomonitoring and incident reports showing poisoning incidents at distances as far away as one-half mile from the application site. *Id.* at 50-58. Comments also pointed out the lack of controls in the Dow study that demonstrated that the experiment was capable of successfully producing or detecting cholinesterase inhibition. Without such controls, the study results cannot be interpreted or used to claim that chlorpyrifos volatilization does not produce cholinesterase inhibition.[29]

B. EPA Found that Chlorpyrifos Exposures are Correlated with Harm to the Developing Brain at Exposures Far Below EPA's Regulatory Endpoint

As long ago as 2000, EPA noted that animal studies reveal that the developing fetus and young animals are more susceptible to chlorpyrifos than adults. Since that time, the scientific evidence of harm to children's brains from chlorpyrifos exposures has grown, with dozens of peer-reviewed scientific articles documenting statistically significant correlations between early life exposures and neurodevelopmental harm.

To respond to the 2007 Petition, EPA conducted a series of transparent and iterative reviews of the extensive scientific literature, including both animal and epidemiology studies, regarding neurodevelopmental harm from chlorpyrifos. It convened its Scientific Advisory Panel ("SAP") several times to review its assessments.

In 2008, EPA convened its SAP to review the significant new data since EPA's 2000 risk assessment. The SAP found that laboratory studies show that "gestational or early postnatal exposures can lead to neurochemical and behavioral alterations that persist into adulthood," including long-term neurobehavioral changes in motor and cognitive behaviors. 2008 SAP Report at 11-12.[30] The Panel found that "chlorpyrifos likely played a role in the birth and neurodevelopmental outcomes noted in the three cohort studies," and found the Columbia study the most sound and appropriate for use in assessing developmental toxicity of chlorpyrifos. *Id.* at 12, 37; *see also id.* at 43 ("chlorpyrifos is likely associated with adverse neurodevelopmental outcomes."). Finally, Panel members noted that the exposures in the Columbia study were below EPA's regulatory endpoint and of concern in light of evidence demonstrating that low levels of exposure to toxicants like lead, mercury, and PCBs are now known to produce significant adverse effects when they were previously thought to be harmful only at high levels.

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[28] Chlorpyrifos July 2014 Partial Petition Response, letter from Jack E. Housenger, Director, EPA Office of Pesticide Programs, to Aaron Colangelo and Margaret Reeves, Ph.D (July 15, 2014).

[29] 2015 Farmworker Comments at 51; Earthjustice, *et al.*, Comments on EPA Proposal to Revoke Chlorpyrifos Tolerances (Jan. 17, 2017) at 21-22.

[30] FIFRA SAP Meeting Minutes No. 2008-04, A Set of Scientific Issues Being Considered by the EPA Regarding: The Agency's Evaluation of the Toxicity Profile of Chlorpyrifos (Sept. 2008), *available at* https://www.regulations.gov/document?D=EPA-HQ-OPP-2008-0274-0064.

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Id. at 43.

In 2010, EPA convened its SAP to address how to incorporate epidemiology and incident data into risk assessments. EPA had developed a draft framework for incorporating epidemiology and human incident data into human health risk assessment. The Panel reviewed the draft and provided factors to be used to evaluate the quality of epidemiology studies, and identified ways such studies could be used in risk assessment.[31]

In July 2011, EPA released its Preliminary Human Health Risk Assessment, which confirmed, as the 2007 Petition claimed was legally required, the need to address drift, volatilization, and health impacts to children at low doses.[32] The assessment expressed concern that current tolerances may not afford sufficient protection to children from drinking water and drift exposures, particularly infants. Reader's Guide at 2-3; 2011 PHHRA at 17. As to the mounting evidence of neurodevelopmental impacts, EPA concluded that "chlorpyrifos likely played a role in long term neurological effects from early exposures that were evaluated in the epidemiology studies." Reader's Guide at 2-3. Despite these statements, EPA proposed to reduce the FQPA 10X safety factor to 1X, *i.e.*, to eliminate it. Numerous comments opposed eliminating the FQPA 10X safety factor, including comments submitted by the California Department of Pesticide Regulation observing that developmental neurotoxicity may be a more sensitive endpoint than cholinesterase inhibition and "[p]rotection against brain cholinesterase inhibition alone may be insufficient to protect against such effects."[33]

In 2012, EPA convened its SAP to review EPA's more comprehensive analysis of the neurotoxicity of chlorpyrifos. In its report, the SAP noted significant, long-term adverse effects on neurobehavioral development from chlorpyrifos in laboratory animal studies. It found that the epidemiology "studies show some consistent associations relating exposure measures to abnormal reflexes in the newborn, pervasive development disorder at 24 or 36 months, mental development at 7-9 years, and attention and behavior problems at 3 and 5 years of age." 2012 SAP at 17.[34] The Panel concurred with EPA and the 2008 SAP that "chlorpyrifos likely plays a role in impacting the neurodevelopmental outcomes examined in the three cohort studies," *id.* at 18, and it noted that "multiple lines of evidence suggest chlorpyrifos can affect neurodevelopment at levels lower than those associated with AChE inhibition." *Id.* at 19. Because the mode of action has not been identified, the SAP believed the cohort studies do not readily lend themselves as the basis for establishing the point of departure. However, the Panel expressed concern over EPA's focus on 10% cholinesterase inhibition because there is no

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[31] FIFRA SAP Meeting Minutes No. 2010-03, A Set of Scientific Issues Being Considered by the EPA Regarding: Draft Framework and Case Studies on Atrazine, Human Incidents, and the Agricultural Health Study: Incorporation of Epidemiology and Human Incident Data into Human Health Risk Assessment (Feb. 2010), *available at* https://www.regulations.gov/document?D=EPA-HQ-OPP-2009-0851-0059.

[32] EPA, Reader's Guide to the Preliminary Human Health Risk Assessment for Chlorpyrifos at 1-3 (July 1, 2011) ("Reader's Guide") (EPA-HQ-OPP-2008-0850-0027).

[33] Comment submitted by California Department of Pesticide Regulation to EPA (Sept. 30, 2011) at 3 (EPA-HQ-OPP-2008-0850-0099).

[34] FIFRA SAP Meeting Minutes No. 2012-04, A Set of Scientific Issues Being Considered by the EPA Regarding: Chlorpyrifos Health Effects (Apr. 2012), *available at* https://www.regulations.gov/document?D=EPA-HQ-OPP-2012-0040-0029.

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mechanism whereby a 10% AChE activity reduction in pregnant women would be responsible for a cognitive defect or developmental delay in their offspring." *Id.* at 25. The Panel advised EPA to explore ways to use the Columbia study to inform dose-response relationships. *Id.* at 19.

In December 2014, EPA released its Revised Human Health Risk Assessment for Chlorpyrifos ("2014 RHHRA") [35] and acknowledged the strong convergence in the findings from the animal studies and the three mother-child cohort studies. It found that the laboratory animal studies indicated "that gestational and/or postnatal exposure may cause persistent behavioral effects into adulthood." 2014 RHHRA at 25; *see id.* at 26 ("upon review of the published literature a pattern of neurodevelopmental adverse outcomes emerges."). It called the cohort studies "strong studies which support a conclusion that chlorpyrifos likely played a role in these outcomes." *Id.* at 33. More specifically, the studies:

> consistently identified associations with neurodevelopmental outcomes in relation to chlorpyrifos exposure. There is evidence of delays in mental development in infants (24-36 months), attention problems and pervasive developmental disorder in early childhood, and intelligence decrements in school age children who were exposed to chlorpyrifos or OP during gestation. Investigators reported strong measures of statistical association across several of these evaluations (odds ratios 2-4 fold increased in some instances) and observed evidence of exposure-response trends in some instances, e.g., intelligence measures.

Id at 42. EPA concluded "that these lines of evidence together support a conclusion that exposure to chlorpyrifos results in adverse neurodevelopmental outcomes in humans, at least under some conditions." *Id.* at 49. EPA also concluded that the range of exposures in the epidemiology studies were too low to result in cholinesterase inhibition. *Id.*; *see id.* at 47 ("it is unlikely that [cholinesterase] would have been inhibited by any meaningful or measureable amount, if at all" in the studies). EPA noted that the mode of action by which chlorpyrifos causes long-lasting damage to children's brains is uncertain, as is the particular exposure level at which such effects occur (apart from knowing it is lower than EPA's regulatory endpoint based on cholinesterase inhibition). Based on these uncertainties, EPA retained the FQPA 10X safety factor for infants, children, youth, and women of child-bearing years. *Id.* at 49.

EPA continued to use cholinesterase inhibition as its regulatory endpoint in its 2014 risk assessment, despite acknowledging that the harm to children's brains occurred at lower exposures and is therefore the most sensitive endpoint. EPA then used a model developed by Dow Agrosciences (called a physiologically based pharmacokinetic or PBPK model) to estimate doses in people associated with cholinesterase inhibition. Because the model uses human data, at least in part, EPA decided it could eliminate the traditional 10X safety factor that accounts for uncertainty in extrapolating from animal tests to human impacts (inter-species safety factor). It also reduced by half or more the other traditional 10X safety factor designed to account for variability and sensitivity within human populations (intra-species factor), believing that the human data and the model incorporate such human variability.

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[35] Chlorpyrifos: Revised Human Health Risk Assessment for Registration Review (Dec. 29, 2014) (EPA-HQ-OPP-2008-0850-0195).

Public comments objected to the reduction of these traditional safety factors because the Dow model estimates exposures associated with the cholinesterase inhibition endpoint, and neurodevelopmental harm occurred from prenatal exposures far below those that would result in 10% cholinesterase inhibition.[36] In addition, EPA's Scientific Advisory Panel had found serious problems with the Dow model in 2011, yet EPA never submitted the model, as subsequently modified, for further review by the Panel, nor did EPA explain how the modifications corrected the problems identified by the 2011 SAP. 2011 SAP at 11, 13-17.[37] The model uses data from two studies that deliberately dosed people, and EPA cannot rely on such deliberate human testing without ensuring the tests meet rigorous ethical and scientific standards. 40 C.F.R. §§ 26.1701-.1706. Comments objected to EPA's use of the Dow model because EPA did not obtain review of the studies under current legal standards by its Human Studies Review Board and because of ethical flaws in using Dow employees in one study and in its misleading informed consent, as well as scientific deficiencies. 2015 Farmworker Comments at 36-42.

Even though the 2014 RHHRA used an endpoint that fails to protect children from neurodevelopmental harm and shrunk the traditional safety factors, it found that a substantial number of chlorpyrifos uses will result in exposures that exceed EPA's drinking water levels of concern. 80 Fed. Reg. at 69,083. EPA determined that the drinking water exceedances were likely to be conservative because its modeling is validated by empirical water monitoring data and its modeling is based on a single application.[38]

V. THE UNREASONABLE DELAY LITIGATION

It took a series of unreasonable delay lawsuits to obtain EPA action on the 2007 Petition. Shortly after PAN filed the 2007 Petition, EPA found that the petition met the legal requirements for FFDCA petitions and published a notice in the Federal Register requesting public comments. 72 Fed. Reg. 58,845 (Oct. 17, 2007). After three years passed without a response to the 2007 Petition, PAN and NRDC filed an unreasonable delay lawsuit, which they settled based on EPA's commitment to respond to the Petition by the end of November 2011. *NRDC v. EPA*, No. 10-05590-CM, Dkt. No. 17, at 2-3 (S.D.N.Y. Dec. 21, 2010) (Stipulation).

After EPA missed the 2011 deadline, PAN and NRDC brought a second delay lawsuit. EPA issued a partial response to the 2007 Petition, promising a complete final response in

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[36] 2015 Farmworker Comments at 28-32. *See also*, Comment submitted by Elaine M. Faustman, Ph.D. DABT, on behalf of the Institute of Risk Analysis and Risk Communication and the Center for Child Environmental Health Risks Resarch at the University of Washington (EPA-HQ-OPP-2008-0850-0829); Comment submitted by Robin M. Whyatt, Professor, Columbia University, Dale Hattis, Research Professor, Clark University and Theodore Slotkin, Duke University School of Medicine (EPA-HQ-OPP-2008-0850-0510).

[37] FIFRA SAP Meeting Minutes No. 2011-03, A Set of Scientific Issues Being Considered by the EPA Regarding Chlorpyrifos Physiologically Based Pharmacokinetic and Pharmacodynamis (PBPK/PD) Modeling Linked to Cumulative and Aggregate Rise Evaluation System (CARES) (Feb. 2011), *available at* https://www.regulations.gov/document?D=EPA-HQ-OPP-2010-0588-0038.

[38] Chlorpyrifos: Updated Drinking Water Assessment for Registration Review (Dec. 23, 2014) (EPA-HQ-OPP-2008-0850-0198).

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December 2012.[39] While EPA's first interim response addressed six points made in the 2007 Petition, it did not determine whether EPA would ban chlorpyrifos. *See id.* The only practical effect of EPA's July 2012 partial decision consisted of EPA's announcement that the chlorpyrifos registrants had agreed to a spray drift mitigation package that calls for small no-spray buffers (most were only ten feet) around school grounds, homes, residential lawns, athletic fields, nursing homes, hospitals, sidewalks, and other places frequented by bystanders.[40] EPA then missed the December 2012 deadline for issuing a response to the 2007 Petition, but it promised a final response by February 2014.[41]

In 2013, the Ninth Circuit Court of Appeals decided not to order EPA to respond to the 2007 Petition because the agency had "set forth a concrete timeline for final agency action that would resolve the 2007 Petition by February 2014." *In re PANNA*, 532 F. App'x 649, 651 (9th Cir. 2013).

EPA missed its February 2014 deadline. In July 2014, EPA issued another partial response and reversed its earlier preliminary determination that chlorpyrifos volatilization presents risks that warrant large, no-spray buffers (in some instances many thousands of feet) around schools, homes, and other places frequented by people. EPA based this reversal on two new studies conducted by Dow AgroSciences LLC, the primary chlorpyrifos registrant.[42] In that partial response, EPA indicated that it planned to release a revised human health risk assessment for public comment in December 2014, along with either a proposed rule revoking tolerances for chlorpyrifos or a proposed order denying the 2007 Petition, and that it would issue any final denial of the 2007 Petition by the summer of 2015.

After EPA missed its February 2014 deadline, PAN and NRDC filed a third unreasonable delay case seeking a writ of mandamus from the Ninth Circuit directing EPA to act. When the case was argued on June 4, 2015, EPA told the court that it would complete its preliminary review of the public comments on the 2014 risk assessment by June 30, 2015 and determine whether it would deny or grant the 2007 Petition, in whole or in part. On June 10, 2015, the court ordered EPA to file a status report by June 30, 2015 informing the court which path it would take and proposing a timeline for final resolution of the 2007 Petition. *In re PANNA*, 790 F.3d 875 (9th Cir. 2015). EPA's June 30, 2015 status report revealed that EPA had become convinced that revocation of all chlorpyrifos food tolerances was warranted because of drinking

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[39] EPA's Partial Response to Chlorpyrifos Petition by NRDC & PANNA, letter from Dr. Steven Bradbury, Director, EPA Office of Pesticide Programs, to Aaron Colangelo and Margaret Reeves, Ph.D (July 16, 2012).

[40] *Id.* (citing Chlorpyrifos – Evaluation of the Potential Risks from Spray Drift and the Impact of Potential Risk Reduction Measures (July 13, 2012) at 3).

[41] *See* Chlorpyrifos Petition – December 2012 Response, letter from Dr. Steven Bradbury, Director, EPA Office of Pesticide Programs, to Aaron Colangelo and Margaret Reeves, Ph.D (Dec. 18, 2012) (EPA-HQ-OPP-2007-1005-0096); Chlorpyrifos Petition – January 2013 Response, letter from Dr. Steven Bradbury, Director, EPA Office of Pesticide Programs, to Aaron Colangelo and Margaret Reeves, Ph.D (Jan. 25, 2013) (EPA-HQ-OPP-2007-1005-0097); EPA Response to Petition for Writ of Mandamus, in *In re PANNA*, No. 12-71125 (9th Cir. July 24, 2012).

[42] Chlorpyrifos July 2014 Partial Petition Response, letter from Jack E. Housenger, Director, EPA Office of Pesticide Programs, to Aaron Colangelo and Margaret Reeves, Ph.D (July 15, 2014) at 2-5.

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water contamination. Because it offered no definitive timetable for initiating and completing such a revocation rule, PAN and NRDC asked the Court to do so.

In August 2015, the Ninth Circuit issued a writ of mandamus setting deadlines for EPA action. The decision began as follows:

> Although filibustering may be a venerable tradition in the United States Senate, it is frowned upon in administrative agencies tasked with protecting human health. Pesticide Action Network North America and the Natural Resources Defense Council have been waiting for years for the United States Environmental Protection Agency to respond to their administrative petition requesting a ban on the pesticide chlorpyrifos. Instead, they've received a litany of partial status reports, missed deadlines, and vague promises of future action. We recognize the scientific complexity inherent in evaluating the safety of pesticides and the competing interests that the agency must juggle. However, EPA's ambiguous plan to possibly issue a proposed rule nearly nine years after receiving the administrative petition is too little, too late. This delay is egregious and warrants mandamus relief. We order EPA to issue a full and final response to the petition no later than October 31, 2015.

In re PANNA, 798 F.3d 809, 811 (9th Cir. 2015); *see id.* at 813 ("Issuing a writ of mandamus is necessary to end this cycle of incomplete responses, missed deadlines, and unreasonable delay.").

The court explained that the circumstances had changed in two significant respects since the court rejected the earlier request in 2013. First, in 2006, after residential uses had ended, EPA had found the remaining chlorpyrifos uses to be safe and it had not overturned those findings in its 2011 preliminary human health risk assessment. That changed in 2014 when EPA found agricultural uses of chlorpyrifos unsafe due to drinking water contamination and also noted serious risks to farmworkers who apply chlorpyrifos or who enter fields after chlorpyrifos has been sprayed. The court found that "EPA offers no acceptable justification for the considerable human health interests prejudiced by the delay. In view of EPA's own assessment of the dangers to human health posed by this pesticide, we have little difficulty concluding it should be compelled to act quickly to resolve the administrative petition." *Id.* at 814.

Second, EPA told the court that complex regulatory proceedings may be needed to effectuate a chlorpyrifos ban. While it indicated it would try to negotiate a settlement with the registrants, if voluntary action did not eliminate unsafe exposures, EPA would need to take regulatory action to revoke chlorpyrifos food tolerances. Yet EPA offered the court no concrete timeline for proposing, let alone finalizing, a tolerance revocation rule. Calling this approach "a roadmap for further delay," the court concluded that EPA had "stretched the 'rule of reason' beyond its limits." *Id.*

The court ordered EPA either to initiate a tolerance revocation rulemaking or deny the 2007 Petition by October 31, 2015, and if it proposed to revoke tolerances, to provide a timeline for finalizing that proposed rule. *Id.* at 815. After EPA proposed to revoke all chlorpyrifos tolerances, the court directed EPA to take final action on that proposal by December 30, 2016. *In re PANNA*, No. 14-72794, Order (9th Cir. Dec. 10, 2015). The court also directed EPA to file

a status report on June 30, 2016, detailing the steps taken to meet the final deadline and indicating that the court would extend the deadline only if EPA showed that extraordinary circumstances made compliance impracticable. *Id.*

EPA sought an additional six months to conduct further scientific review, referring to its efforts to quantify the exposures associated with damage to children's brains for use in a quantitative risk assessment and to continue its assessment of drinking water risks. The court denied the request, calling it "another variation on a theme 'of partial reports, missed deadlines, and vague promises of future action' that has been repeated for the past nine years." *In re PANNA*, No. 14-72794, Order (9th Cir. Aug. 12, 2016). The court found no justification for further delay in responding "to the pressing health concerns presented by chlorpyrifos." *Id.*; *see id.* ("a claim of premature rulemaking has come and gone."). The court nonetheless gave EPA until March 31, 2017 to take final action and stated: "This is the final extension, and the court will not grant any further extensions." *Id.*

VI. EPA PROPOSED TO REVOKE ALL TOLERANCES BECAUSE IT FOUND CHLORPYRIFOS UNSAFE

In October 2015, EPA proposed to revoke all chlorpyrifos tolerances because of drinking water contamination. 80 Fed. Reg. 69,080 (Nov. 6, 2015). EPA concluded that it "is unable to conclude that the risk from aggregate exposure from the use of chlorpyrifos meets the safety standard of the Federal Food, Drug, and Cosmetic Act (FFDCA)." *Id.*; *see also id.* at 69,081 ("EPA cannot, at this time, determine that aggregate exposure to residues of chlorpyrifos, including all anticipated dietary exposures and all non-occupational exposures for which there is reliable information, are safe."). "Because EPA is unable to determine at this time that aggregate exposures to chlorpyrifos are safe, EPA is proposing to revoke these tolerances in response to a Petition from PANNA and the Natural Resources Defense Council (NRDC) to revoke all chlorpyrifos tolerances...." *Id.* at 69,081.

Drinking water contamination proved to be the impetus for the proposed revocation. EPA relied on its 2014 risk assessment, which it called "a highly sophisticated assessment of hazard and exposure to chlorpyrifos and its oxon." *Id.* at 69,082. Based on that assessment, EPA determined that multiple chlorpyrifos uses exceed EPA's drinking water level of concern with considerable frequency and present a risk of concern with infants most at risk. *Id.* at 69,082-83. EPA found all chlorpyrifos uses under current labels to be unsafe. *Id.* at 69,083. The proposed rule held open the possibility that registrants and growers might be able to submit additional information and propose label modifications to prevent some watersheds from being at risk from certain chlorpyrifos uses. *Id.* at 69,080.

The proposed rule also acknowledged that the 2014 risk assessment was under-protective of children because it was based on cholinesterase inhibition and the harm to children's brains is associated with lower exposures. EPA indicated that it would continue to review the evidence of long-lasting neurodevelopmental harm to children from low-level exposures and to try to incorporate that evidence into its risk assessment and regulatory determination.

In public comments to EPA, farmworker and health advocates submitted recently published scientific articles that continued to strengthen the correlation between low-level

chlorpyrifos exposures and damage to children's brains, and also found lung damage in 11-year olds and tremors that could impair their ability to draw and write.[43] The comments continued to urge EPA to develop an endpoint or restore the traditional safety factors to protect children from this harm, and conducted calculations based on the 2014 risk assessment to add such protection, which showed that exposures are unsafe from food alone, all drinking water, and from drift at distances greater than those covered by the spray drift buffers put in place in 2012. The comments cited evidence that chlorpyrifos travels further, including a Washington incident when workers were sickened by chlorpyrifos being applied about a mile from their worksite.[44]

VII. EPA FOUND SERIOUS HARM, PARTICULARLY TO CHILDREN, AT LOWER EXPOSURES IN ITS MOST RECENT ASSESSMENTS

To protect against damage to children's brains from low-level exposures and to ensure that its regulatory actions are based on the most sensitive endpoint, consistent with longstanding EPA policy, EPA sought to identify a regulatory endpoint from the Columbia study that correlated chlorpyrifos exposures with serious harm to children's brains.[45] In 2016, EPA used measurements of chlorpyrifos in cord blood from the Columbia study to derive a more protective endpoint that would protect against adverse brain impacts, heeding a recommendation of the 2012 SAP. EPA submitted its analysis to the SAP for review. Even though the SAP did not support EPA's particular methodology for deriving such an endpoint, the SAP concurred with EPA's conclusion in the 2014 risk assessment that the 10% cholinesterase inhibition endpoint is not protective because damage to children's brains occurred at lower doses and EPA should take steps to protect against this harm. 2016 SAP at 18, 52-53.[46]

In November 2016, EPA released its 2016 Chlorpyrifos Revised Human Health Risk Assessment ("2016 RHHRA").[47] EPA derived a regulatory endpoint based on neurodevelopmental effects because the Agency had determined that neurodevelopmental harm to fetuses occurred when pregnant mothers were exposed to far lower doses of chlorpyrifos than what produces 10% cholinesterase inhibition. 2016 RHHRA at 13. EPA considered all lines of

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[43] Earthjustice, et al Comments on EPA Proposal to Revoke Chlorpyrifos Tolerances (Jan. 5, 2016) at 7 (EPA-HQ-OPP-2015-0653-0390).

[44] *Id.* at 21 (citing Washington State Department of Health Comments (May 8, 2015) (EPA-HQ-OPP-2008-0850-0842)).

[45] Also, as EPA continued to review the scientific evidence correlating low-level exposures to chlorpyrifos and other organophosphates with damage to children's brains, it reiterated and expanded its findings substantiating this harm to all organophosphates, given that they share a common mechanism of toxicity, and extensive scientific evidence correlates organophosphates with adverse neurodevelopmental effects. *See* Literature Review on Neurodevelopment Effects and FQPA Safety Factor Determination for the Organophosphate Pesticides (Sept. 2015), *available at* https://www.regulations.gov/%23!documentDetail;D=EPA-HQ-OPP-2008-0440-0039.

[46] FIFRA Scientific Advisory Panel Minutes No. 2016-01, A Set of Scientific Issues Being Considered by the EPA Regarding Chlorpyrifos:Analysis of Biomonitoring Data) (Apr. 2016), *available at* https://www.regulations.gov/document?D=EPA-HQ-OPP-2016-0062-0140.

[47] Chlorpyrifos Revised Human Health Risk Assessment (Nov. 3, 2016) (EPA-HQ-OPP-2015-0653-0454).

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evidence, including human epidemiological and animal toxicological studies in making its determination to change its endpoint. 81 Fed. Reg. 81,049, 81,050 (Nov. 17, 2016) (agreeing with Scientific Advisory Panel that existing point of departure based on 10% cholinesterase inhibition is "not sufficiently health protective"). EPA also retained the FQPA 10X safety factor to account for uncertainty in using a lowest-observable adverse effect level in the absence of a no-observable adverse effect level. 2016 RHHRA at 22.[48]

In establishing an updated regulatory endpoint, EPA used the physiologically based pharmacokinetic ("PBPK") model developed by Dow AgroSciences as a tool to analyze exposure estimates. EPA followed the recommendation of the 2016 Scientific Advisory Panel and used the PBPK model to predict a time-weighted average blood concentration for women in the Columbia cohort. 2016 RHHRA at 16-17. EPA applied the average blood concentration to females, infants, and young children, which was supported by data from animal studies showing that both the pre- and post-natal periods are windows of susceptibility.[49]

Using this more appropriate endpoint, EPA found that chlorpyrifos presents unacceptable safety risks through exposures from food, drinking water, spray drift, and occupational activities. Food-only exposures for chlorpyrifos were found to be unsafe for all population subgroups analyzed, with young children having the highest risks of concern. 2016 RHHRA at 23. While the adult subgroup had an alarming risk estimate at 62 times the safe level of exposure, the risk estimate for children ages 1-2 was more than double that of adults at 140 times safe levels. *Id.* Additionally, EPA's revised assessment did not result in any changes to its finding that "the majority of estimated drinking water exposures from currently registered uses, including water exposures from non-food uses, continue to exceed safe levels even taking into account more refined drinking water exposures." 81 Fed. Reg. at 81,050. Regarding spray drift, EPA found unsafe levels of chlorpyrifos from the field's edge to distances of more than 300 feet from where the pesticide is sprayed and unsafe levels in the ambient air recorded in air monitoring performed in agricultural communities in California and Washington. 2016 RHHRA at 31. EPA also found unacceptable risks to all farmworkers who mix and apply chlorpyrifos, even with maximum levels of personal protective equipment or engineering controls. 2016 RHHRA at 36-37. Moreover, even though current labels allow workers to re-enter the fields within 1-5 days after pesticide spraying to weed, irrigate, and pick crops, EPA found that, on average, re-entry intervals of at least 18 days were needed to protect workers from risks of concern. *Id.* at 38.

After releasing the 2016 RHHRA, EPA reopened the comment period for its proposal to revoke chlorpyrifos food tolerances, noting that:

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[48] EPA's longstanding risk assessment methods apply an additional uncertainty or safety factor when the scientific studies do not identify a no-observable adverse effect level. EPA then uses and extrapolates from the lowest-observable adverse effects level, and adds a safety factor to guard against exposing people to the observed adverse effects. EPA Office of Pesticide Programs, *Determination of the Appropriate FQPA Safety Factor(s) in Tolerance Assessment* at 9 (Feb. 28, 2002) (https://www.epa.gov/sites/production/files/2015-07/documents/determ.pdf).

[49] EPA reviewed animal studies and found at in its 2014 Revised Human Health Risk Assessment for Chlorpyrifos that, "There is a considerable and growing body of literature on the effects of chlorpyrifos on the developing brain of laboratory animals (rats and mice) indicating that gestational and/or postnatal exposure may cause persistent behavioral effects into adulthood. These data provide support for the susceptibility of the developing mammalian brain to chlorpyrifos exposure." 2014 RHHRA at 25-26.

> EPA's revised analyses do not result in a change to the EPA's proposal to revoke all tolerances but it does modify the methods and risk assessment used to support that finding in accordance with the advice of the SAP. The revised analysis indicates that expected residues of chlorpyrifos on most individual food crops exceed the ''reasonable certainty of no harm'' safety standard under the Federal Food, Drug, and Cosmetic Act (FFDCA). In addition, the majority of estimated drinking water exposures from currently registered uses, including water exposures from non-food uses, continue to exceed safe levels even taking into account more refined drinking water exposures. Accordingly, based on current labeled uses, the agency's analysis provided in this notice continues to indicate that the risk from the potential aggregate exposure does not meet the FFDCA safety standard. EPA can only retain chlorpyrifos tolerances if it is able to conclude that such tolerances are safe. EPA has not identified a set of currently registered uses that meets the FFDCA safety standard because it is likely only a limited number of food uses alone, and in combination with predicted drinking water exposures, would meet the standard. Further, EPA has not received any proposals for mitigation that registrants may be willing to undertake that would allow the EPA to retain any of the tolerances subject to this rulemaking.

81 Fed. Reg. at 81,050.

This was the state of the record as the March 31, 2017 court-ordered deadline approached. EPA had found chlorpyrifos unsafe due to drinking water contamination in 2014, leading to the 2015 proposal to revoke all tolerances. No mitigation or further analysis lessened the risks. To the contrary, as EPA conducted further assessment to determine what action is necessary to guard against damage to children's developing brains, it found unsafe exposures every way people come into contact with chlorpyrifos whether in food, in drinking water, or in the air. And young children are most at risk. The fate of chlorpyrifos had been all but sealed.

VIII. THE ORDER DENYING THE 2007 PETITION

Instead of finalizing the proposed revocation order based on its findings that chlorpyrifos is unsafe, on March 29, 2017, the new EPA Administrator, Scott Pruitt, issued an order on March 29, 2017, entitled "Chlorpyrifos: Order Denying PANNA and NRDC Petition to Revoke Tolerances" ("Pruitt Order"), 82 Fed. Reg. 16,581, 16,583 (Apr. 5, 2017). The Pruitt Order finalized the interim responses EPA had previously provided addressing spray drift, volatilization, endocrine disruption screening, cancer risks, export hazards, and other issues. The Pruitt Order reiterated the interim responses, even where subsequent EPA action had reversed or severely undermined the rationale for the earlier partial response based on further analysis or new scientific evidence. For example, EPA defended dispensing with the FQPA 10X safety factor for chlorpyrifos, even though it decided in 2014 that the FQPA safety factor had to be retained in full. *Id.* at 16,588-89. EPA also repeated its earlier justification for not considering genetic vulnerability to chlorpyrifos, even though the Dow model used in EPA's 2014 and 2016 risk assessments incorporated such genetic variability into its metrics. *Id.* at 16,585-86. And EPA adhered to its incomplete assessment and mitigation for spray drift and volatilization,

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without ever acknowledging, let alone addressing, the public comments criticizing EPA's approach as legally and scientifically flawed.

With the exception of the FIFRA export claim not at issue here, EPA had indicated that it would not make its interim, partial responses final, unless PAN and NRDC requested that it do so. *See id.* at 16,583, 16,585. PAN and NRDC did not ask EPA to make the partial responses final because the heart of the 2007 Petition — neurodevelopmental harm to children from chlorpyrifos at low doses — remains unresolved. Resolution of that issue in a manner that protects children would lead to revocation of chlorpyrifos tolerances and eliminate the need for objections and further proceedings. Moreover, EPA had not addressed the comments submitted by PAN, NRDC, and others, criticizing the spray drift mitigation and interim volatilization determination because they were based on poisoning risks and not damage to children's brains at lower doses. Nor had EPA yet addressed comments making the case that EPA: (1) had illegally ignored direct drift and inhalation exposures in its spray drift assessment and mitigation; and (2) had backtracked from its volatilization assessment documenting unsafe exposures far from the application site based on two scientifically flawed Dow studies.

PAN and NRDC believed that EPA would follow the law and science, and revoke all chlorpyrifos tolerances once it developed a regulatory endpoint and risk assessments that would protect children from neurodevelopmental harm, and once it addressed the public comments revealing serious flaws in its approach to spray drift and volatilization. While EPA did revise its human health risk assessment in 2016 based on a regulatory endpoint designed to prevent low-level exposures associated with brain damage to children, the Pruitt Order made no final decisions and took no final action based on that assessment or any other approach that would protect children's brains. Nor did the Pruitt Order address the public comments revealing flaws that made its treatment of spray drift and volatilization to date under-protective, particularly of children.

As to the one issue EPA had not previously resolved — neurodevelopmental harm from chlorpyrifos — the Pruitt Order made no substantive determination. Despite EPA's repeated findings that chlorpyrifos is unsafe, the Pruitt Order did not finalize the tolerance revocation rule. Instead, the Pruitt Order postponed such action based on the Administrator's preference to engage in further study of the harm to children's brains from chlorpyrifos before finalizing the October 2015 proposed revocation rule or taking an alternative regulatory path. *Id.* at 16,590. Without any elaboration, the Pruitt Order asserted vaguely that comments received in response to the October 2015 proposed rule and its November 2016 risk assessment suggest some stakeholders believe uncertainty persists about the use of epidemiological data in risk assessments. *Id.*

EPA framed its delay in deciding whether to revoke chlorpyrifos food tolerances as a reprioritization of the chlorpyrifos registration review schedule developed by earlier administrations. *Id.* EPA asserts that, while the Ninth Circuit's order compelled a response to the 2007 Petition, the court "cannot compel EPA to complete the registration review of chlorpyrifos in advance of the October 1, 2022 deadline" for registration review of all older pesticides. *Id.*

Acknowledging that it is not legally a relevant factor, the Pruitt Order nonetheless stated: "it is important to note that for many decades chlorpyrifos has been and remains one of the most

widely used pesticides in the United States" and that a decision to remove the pesticide from the market would be a "significant policy choice." *Id.* Citing the significance of the decision and uncertainty regarding the correlation between chlorpyrifos and adverse neurodevelopmental effects, the Pruitt Order expressed the Administrator's preference to engage in further study before finalizing any regulatory action. *Id.*

Within a week of EPA's Pruitt Order, PAN and NRDC filed a motion with the Ninth Circuit seeking further mandamus relief because EPA had essentially given itself an open-ended extension of time to make chlorpyrifos tolerance decisions, rather than take action on the 2007 Petition and EPA's findings that chlorpyrifos is unsafe. Specifically, PAN and NRDC asked the Ninth Circuit to give EPA a 30-day deadline to take final regulatory action by either: (1) revoking chlorpyrifos tolerances based on its findings that chlorpyrifos is unsafe; or (2) denying the 2007 Petition if EPA could find chlorpyrifos safe. The motion also asked the court to establish a deadline for EPA to resolve any objections filed contesting its final tolerance action. The motion was fully briefed on May 5, 2017. If the Ninth Circuit fully grants the motion, it will moot these objections.

OBJECTIONS

The EPA Administrator's decision to leave chlorpyrifos tolerances in place cannot stand for two reasons. First, the decision violates the law, which allows the Administrator to leave tolerances in place only if he finds the pesticide safe. EPA has repeatedly found chlorpyrifos unsafe. The Administrator therefore lacks the legal authority to retain tolerances for this harmful pesticide. Second, the Administrator's rationale for putting off regulatory action on chlorpyrifos is indefensible under both the law, given EPA's findings chlorpyrifos is unsafe, which flow from the solid and extensive scientific evidence before the agency. The Pruitt Order should be reversed, and EPA should issue a final revocation rule on an expeditious basis. It should take EPA no longer than 60 days to rule on these objections because they present purely legal issues, and EPA has an obligation to resolve objections "as soon as practicable". *See* 21 U.S.C. § 346a(g)(2)(c) (EPA Administrator must issue an order on objections "as soon as practicable").

I. EPA'S DENIAL OF THE 2007 PETITION IS ILLEGAL BECAUSE EPA CANNOT MAINTAIN TOLERANCES IN THE FACE OF ITS FINDINGS THAT CHLORPYRIFOS IS UNSAFE

EPA's decision to leave chlorpyrifos tolerances in place violates the law and exceeds the Administrator's legal authority. Under the FFDCA, the EPA Administrator "may establish or leave in effect a tolerance for a pesticide chemical residue in or on food *only if* the Administrator determines that the tolerance is safe." 21 U.S.C. § 346a(b)(2)(A)(i) (emphasis added). "Safe" means the Administrator has determined that there is a reasonable certainty of no harm from aggregate exposures to the pesticide chemical residue. *Id.* § 346a(b)(2)(A)(ii). The law spells out the consequences of an inability to make the required safety finding in a way that leaves no discretion: "The Administrator *shall* modify or revoke a tolerance if the Administrator determines it is not safe." *Id.* § 346a(b)(2)(A)(i) (emphasis added). Because EPA has repeatedly found chlorpyrifos to be unsafe, the Administrator must revoke all food tolerances for chlorpyrifos.

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EPA first found unsafe drinking water exposures and proposed to revoke all chlorpyrifos tolerances on this basis, which is addressed in A below. When EPA took steps to protect children from neurodevelopmental harm, it found chlorpyrifos unsafe every way people are exposed to it, which is addressed in B below.

A. EPA Found Unsafe Drinking Water Contamination from Chlorpyrifos Using Poisoning Risks as the Regulatory Endpoint

After years of study and several rounds of review by its Scientific Advisory Panel, EPA has made an unbroken series of findings that chlorpyrifos harms children's brains at lower exposures than those used by EPA in its previous risk assessments and regulatory decision. EPA's analysis of the scientific evidence and several SAP reviews culminated in the 2014 risk assessment, which found that chlorpyrifos causes harm to children's brains from prenatal exposures and that this harm occurs at exposures far lower than EPA's regulatory endpoint, 10% red-blood cell cholinesterase inhibition. This finding, coupled with uncertainties about the precise low-level exposures that damage children's developing brains, led EPA to retain the FQPA tenfold margin of safety to protect children from neurodevelopmental harm. The 2014 risk assessment documented drinking water contamination from chlorpyrifos that exposed children to unsafe levels of the pesticide. 2014 RHHRA at 48-49, 95-96.

In October 2015, EPA proposed to revoke all tolerances because it could not "determine that aggregate exposure to residues of chlorpyrifos, including all anticipated dietary exposures and all other non-occupational exposures for which there is reliable information, are safe." 80 Fed. Reg. 69,080, 69,081 (Nov. 6, 2015). EPA explained:

> Section 408(d) of the FFDCA, 21 U.S.C. 346a(d), authorizes EPA to revoke tolerances in response to administrative petitions submitted by any person. Because EPA is unable to determine at this time that aggregate exposures to chlorpyrifos are safe, EPA is proposing to revoke these tolerances in response to a Petition from PANNA and the Natural Resources Defense Council (NRDC) to revoke all chlorpyrifos tolerances . . ..This proposal also implements the agency findings made during the registration review process required by section 3(g) of FIFRA (7 U.S.C. 136(a)(g)) which EPA is conducting in parallel with its petition response.

Id. EPA's proposal to revoke chlorpyrifos tolerances is replete with findings that chlorpyrifos is unsafe:

> EPA cannot determine that current dietary exposures to chlorpyrifos are safe within the meaning of FFDCA section 408(b)(2)(A). [*Id.* at 69,106.]
>
> EPA cannot find that any current tolerances are safe and is therefore proposing to revoke all chlorpyrifos tolerances. [*Id.*]
>
> [F]ood exposures, when aggregated with residential exposures and potentially more significant drinking water exposures do present a significant risk concern and support revocation of all chlorpyrifos tolerances. [*Id.* at 69,097.]

> [W]e cannot make a safety finding based on drinking water exposure. [*Id.* at 69,106.]

See also Declaration of Richard P. Keigwin, Jr., EPA Office of Pesticide Programs, ¶ 5, in *In re PANNA*, No. 14-72794, Dkt. No. 25-2 (9th Cir. Oct. 29, 2015) (proposed rule is "based on EPA's conclusion that it could not make the 'reasonable certainty of harm' finding").

B. EPA Found All Exposures to Chlorpyrifos to be Unsafe When it Sought to Protect Against Damage to Children's Developing Brains

EPA's findings that chlorpyrifos is unsafe flow from the 2014 risk assessment, which uses 10% red blood cell cholinesterase inhibition as the regulatory endpoint. That risk assessment, however, contained a pivotal, and troubling, finding: the damage to children's brains in the mother-child cohort studies occurred from exposures that were too low to produce cholinesterase inhibition. 2014 RHHRA at 47, 49. In its proposal to revoke chlorpyrifos tolerances, EPA indicated it would heed the SAP's advice and try to reconstruct the exposures correlated with adverse brain impacts in the Columbia study or find some other method to protect against this type of harm. This attempt to identify exposures linked to damage to the developing brain is consistent with EPA's policy to ensure that its risk assessments are designed to identify and protect the most sensitive endpoint. While the 2016 SAP did not agree with EPA's first effort to reconstruct the exposure levels based on cord blood samples from the Columbia study, it agreed with EPA that the harmful brain impacts occurred at exposures far below EPA's regulatory endpoint based on cholinesterase inhibition and that EPA should be more protective to guard against such impacts. 2016 SAP at 18, 52-53.

EPA's second effort, released in November 2016, was based in large part on Dow's PBPK model and showed that people will be at risk of harm from virtually every use and every way that people are exposed to chlorpyrifos, with children, and particularly 1 to 2- year olds, most at risk. 2016 RHHRA at 23. With the lower endpoint, the 2016 risk assessment revealed even higher and more pervasive risks from chlorpyrifos:

> All food exposures exceed safe levels, with the most exposed population - children 1-2 years of age - exposed to 140 times what EPA deems to be safe.
>
> Use of chlorpyrifos contaminates drinking water.
>
> Drift of pesticides from the fields expose children to unsafe levels of chlorpyrifos within 300 or more feet of the fields where the pesticide is sprayed. Children could be exposed to harmful drift at schools, day cares, in their homes, and at playgrounds.
>
> For children between 1 to 2- years old, all 11 acute ambient air concentrations assessed resulted in risks of concern. For adults, all but one of the 11 steady state ambient air concentrations assessed resulted in risks of concern.
>
> All workers who mix and apply chlorpyrifos pesticides are exposed to levels greater than what EPA deems to be safe.

> Field workers are currently allowed to re-enter fields within 1-5 days after pesticide spraying, but unsafe exposures continue on average for 18 days after applications.

Id. at 23-24, 30-33.

Not surprisingly, EPA found based on the 2016 risk assessment:

> The revised analysis indicates that expected residues of chlorpyrifos on most individual food crops exceed the 'reasonable certainty of no harm' safety standard under the Federal Food, Drug, and Cosmetic Act (FFDCA). In addition, the majority of estimated drinking water exposures from currently registered uses, including water exposures from non-food uses, continue to exceed safe levels even taking into account more refined drinking water exposures. Accordingly, based on current labeled uses, the agency's analysis provided in this notice continues to indicate that the risk from the potential aggregate exposure does not meet the FFDCA safety standard. EPA can only retain chlorpyrifos tolerances if it is able to conclude that such tolerances are safe. EPA has not identified a set of currently registered uses that meets the FFDCA safety standard . . . .Further, EPA has not received any proposals for mitigation that registrants may be willing to undertake that would allow the EPA to retain any of the tolerances subject to this rulemaking.

81 Fed. Reg. 81,049, 81,050 (Nov. 17, 2016) (citing 2016 RHHRA).

C. EPA's Findings that Chlorpyrifos is Unsafe Compel the Administrator to Revoke All Chlorpyrifos Food Tolerances

In the face of these findings, which build upon the 2014 risk assessment and 2015 tolerance revocation proposal, the EPA Administrator has a legal obligation to revoke all chlorpyrifos tolerances. This is the only legally defensible course of action under the law, which allows the Administrator to leave a tolerance in place "only if the Administrator determines that the tolerance is safe." 21 U.S.C. § 346a(b)(2)(A)(i). Beginning in 2014, EPA has repeatedly stated that it cannot find chlorpyrifos safe and it has since found chlorpyrifos unsafe every way that people are exposed to it. In the face of these findings, the law is clear: "the Administrator shall modify or revoke a tolerance if the Administrator determines it is not safe." *Id.*

This mandatory obligation is reinforced by the FFDCA's provisions laying out the "actions" the Administrator is authorized and directed to take on a petition to revoke tolerances. The FFDCA provides that the Administrator "shall" take one of three permissible actions:

> (i) issue a final regulation (which may vary from that sought by the petition) establishing, modifying, or revoking a tolerance for the pesticide chemical residue …(which final regulation shall be issued without further notice and without further period for public comment);

(ii) issue a proposed regulation under subsection (e) of this section and thereafter issue a final regulation under such subsection; or

(iii) issue an order denying the petition.

Id. § 346a(d)(4)(A).

These actions are stated in the alternative, meaning they are mutually exclusive paths the Administrator may take on a petition or specific part of a petition. The second option starts with a proposed regulation and proceeds to a final regulation after notice and public comment. Here, in contrast, EPA proposed to revoke chlorpyrifos tolerances, but did not finalize that regulation. He left the proposed revocation rule intact, awaiting further final action. Administrator Pruitt then issued an order purporting to deny the 2007 Petition, but without withdrawing the proposed regulation because he did not resolve the merits of the 2007 Petition. The FFDCA does not allow the Administrator to take these two mutually exclusive actions on the same issue concurrently. For this reason as well, the Administrator acted in blatant violation of the law by denying the 2007 Petition and leaving chlorpyrifos tolerances in place.

II. EPA'S RATIONALE FOR LEAVING CHLORPYRIFOS TOLERANCES IN PLACE IS LEGALLY AND SCIENTIFICALLY INDEFENSIBLE

The Pruitt Order offers several reasons for delaying action on chlorpyrifos tolerances for many years, possibly until October 1, 2022. None can legally justify defying the clear legal mandate to revoke tolerances because EPA cannot find chlorpyrifos safe.

A. EPA Cannot Rely on Its 2006 Safety Finding When It Has Since Determined Based on Mounting Scientific Evidence that Chlorpyrifos Damages Children's Brains and is Unsafe

The 2007 Petition sought to compel EPA to address and act on scientific evidence and routes of exposure disregarded in its old risk assessments used in re-registering chlorpyrifos in 2001 and 2006. Oddly, the Pruitt Order defends the 2006 cumulative risk assessment based on the science then available as if time stood still. *See, e.g.,*82 Fed. Reg. at 16,589 ("the Agency is confident that its assessment for chlorpyrifos in 2006 was reasonably based on the best available science *at the time of the assessment*") (emphasis added). To state the obvious, it is no longer 2006. EPA must address the extensive and ever-growing evidence of serious brain damage to children from chlorpyrifos, developed over the past 11 years. *See* 21 U.S.C. § 346a(d)(4) (EPA must assess available information); *id.* § 346a(b)(2)(C)-(D) (EPA must consider available information concerning such factors as toxicity, population sensitivities, and children's exposures).

The Pruitt Order also depicts much of the 2007 Petition as a challenge to the 2006 re-registration determination when the heart of the Petition sought action on issues EPA had sidestepped in 2006, namely drift, volatilization, and damage to the developing brain. *See* 82 Fed. Reg. at 16,590. At one point, the Pruitt Order defends eliminating the FQPA 10X safety factor, even though EPA decided in 2014 that it must retain that safety factor due to gaps in information needed to protect infants and children. *Id.* at 16,588. The Pruitt Order asserts that PAN and NRDC failed to show that using a FQPA 10X safety factor would show chlorpyrifos is unsafe. *Id.* That statement is mind-boggling in light of EPA's findings in its 2014 and 2016 risk

assessments (that retain a FQPA 10X safety factor) that chlorpyrifos is unsafe, which compels revocation of all chlorpyrifos tolerances.

EPA cannot continue to rely on its 2006 safety finding in light of the Agency's and multiple SAP's subsequent findings that chlorpyrifos fails to meet the FQPA safety standard based on an extensive body of peer-reviewed toxicological and epidemiological studies correlating neurodevelopmental harm to fetuses and children with chlorpyrifos exposure. As the Ninth Circuit Court of Appeals noted, EPA "has backtracked significantly from" its 2006 pronouncement of safety when it found chlorpyrifos unsafe in its 2014 risk assessment and determined its tolerances needed to be revoked. *In re PANNA v. EPA*, 798 F.3d at 814. The FQPA gives EPA only two options: the Agency must find that chlorpyrifos is safe based on the evidence currently before it in order to retain chlorpyrifos tolerances, which it cannot do, or it must revoke tolerances based on its findings that chlorpyrifos is unsafe. Hiding behind stale 2006 findings that have since been reversed based on numerous, definitive studies and EPA and SAP findings is not an option.

B. Scientific Uncertainty is Not a Legally Permissible Reason to Leave Chlorpyrifos Tolerances in Place

The primary justification offered in the Pruitt Order for failing to revoke chlorpyrifos tolerances in the face of its prior findings that chlorpyrifos exposures are unsafe is that the Administrator prefers to engage in further study. 82 Fed. Reg. at 16,590 ("EPA's preference is to fully explore approaches raised by the SAP and commenters on the proposed rule, and possibly seek additional peer review of EPA's risk assessment prior to finalizing any regulatory action in the course of registration review."). The Pruitt Order states that:

> EPA has concluded that, despite several years of study, the science addressing neurodevelopmental effects remains unresolved and that further evaluation of the science during the remaining time for completion of registration review is warranted to achieve greater certainty as to whether the potential exists for adverse neurodevelopmental effects to occur from current human exposures to chlorpyrifos. EPA has therefore concluded that it will not complete the human health portion of the registration review or any associated tolerance revocation of chlorpyrifos without first attempting to come to a clearer scientific resolution of those issues.

82 Fed. Reg. at 16,583; *see also id.* at 16,590 ("the science on this question is not resolved and would likely benefit from further inquiry.").

1. The Science Underlying EPA's Findings that Chlorpyrifos is Unsafe is Well-Settled

In putting off action on the 2007 Petition and its proposal to revoke chlorpyrifos tolerances, the Pruitt Order alludes generally to scientific uncertainties, ignoring how much progress has been made in assessing the mounting scientific evidence of neurodevelopmental harm from chlorpyrifos exposures and the weight of the scientific evidence. EPA and the SAP have consistently found that chlorpyrifos causes damage to children's developing brains and that this damage has resulted from exposures that are far lower than EPA's regulatory endpoint. The

chlorpyrifos tolerances currently in place do not protect against these adverse brain impacts. On this point, assertions of scientific uncertainty ring hollow given the overwhelming scientific evidence and the unbroken EPA and SAP findings.

When EPA convened its SAP in 2008 to review post-re-registration science, the SAP found that prenatal and early postnatal chlorpyrifos exposures can produce long-lasting cognitive and motor impairments. 2008 SAP Report at 11-12. The SAP also found that the exposures associated with this serious harm were below EPA's regulatory endpoint. *Id.* at 43-44. In 2012, the SAP again found, based on more extensive scientific review, that chlorpyrifos is associated with abnormal reflexes, mental deficiencies, and attention and behavioral problems from exposures lower than those associated with cholinesterase inhibition, EPA's regulatory endpoint. 2012 SAP at 17, 19. Even the 2016 SAP, which disagreed with EPA's first attempt to quantify exposures correlated with such brain damage, agreed that chlorpyrifos harms children's brains at exposures far below EPA's regulatory endpoint and that EPA needs to be more protective than its 2014 risk assessment. 2016 SAP 18, 52-53.

EPA's risk assessments have, since 2011, similarly found correlations between low-level chlorpyrifos exposures and long-lasting harm to children's brains. The 2011 PHHRA found that chlorpyrifos played a role in causing such neurodevelopmental harm. 2011 PHHRA at 8. The 2014 RHHRA made even stronger findings from multiple lines of evidence that chlorpyrifos results in neurodevelopmental harms to children, such as reduced IQ, delays in mental development, and attention disorders, and that the exposures associated with these brain impairments were too low to produce cholinesterase inhibition. 2014 RHHRA at 41-43, 46.

There may be scientific uncertainty on other issues, but not as to these uncontestable findings. And these findings alone revealed in the 2014 RHHRA that chlorpyrifos is unsafe due to drinking water contamination. *Id.* at 48-49, 95-96.

Scientific uncertainty remains as to the mode of action by which chlorpyrifos damages children's brains and the exact dose at which such effects occur. EPA does not need to know the precise mode of action to know that harm is occurring and that the statutory safety standard is being violated. *See id.* at 48. Nor does EPA need to know the precise dose at which neurodevelopmental harm occurs, given that such harm is occurring at exposures so far below the regulatory endpoint supporting the current chlorpyrifos tolerances that EPA cannot identify a safe exposure level. As explained below, Congress has prescribed how EPA must deal with such uncertainties in protecting the safety of our food supply and preventing harm to children.

2. Congress Directed EPA to Revoke Tolerances if Scientific Uncertainty Precludes Finding the Pesticide Safe.

Congress has established a statutory standard that precludes delaying protection, particularly to children, due to scientific uncertainty when there is evidence of harm. This direction manifests itself in three ways.

First, EPA can "leave in effect a tolerance for a pesticide chemical residue in or on a food only if the Administrator determines that the tolerance is safe." 21 U.S.C. § 346a(b)(2)(A)(i). An affirmative finding of safety is a prerequisite to establishing or retaining a tolerance. And if EPA determines a pesticide is not safe, "[t]he Administrator *shall* modify or revoke a tolerance."

Id. (emphasis added). EPA acknowledged the statutory mandates in its proposed revocation rule, stating: "It is important to stress, however, that because the FFDCA is a safety standard, EPA can only retain chlorpyrifos tolerances if it is able to conclude that such tolerances are safe." 80 Fed Reg. 69,080 (Nov. 6, 2015). Explicitly requiring a safety finding to retain a tolerance reinforces longstanding precedent that places the burden of proof on EPA and industry registrants seeking to retain food tolerances to prove safety. *See Envtl. Def. Fund, Inc. v. U.S. Dep't of Health, Ed. & Welfare*, 428 F.2d 1083, 1092 n.27 (D.C. Cir. 1970) (following petition for revocation, burden of establishing the safety of any tolerance is on those seeking to permit a residue).[50] EPA is mistaken in asserting in the Pruitt Order that petitioners bear the burden of proving that chlorpyrifos is unsafe. 82 Fed. Reg. at 16,587-88.[51] When EPA adhered to the regulatory safety standard and burdens, it proposed to revoke all chlorpyrifos tolerances.

Second, "safe" means that EPA "has determined that there is a reasonable certainty that no harm will result from aggregate exposure to the pesticide chemical residue…." 21 U.S.C. § 346a(b)(2)(A)(ii). Not only must EPA make a safety finding to retain a tolerance, it must find a reasonable certainty of no harm. The fact that chlorpyrifos is associated with serious brain damage at low doses makes it impossible for EPA to find a reasonable certainty of no harm from exposures allowed under the current tolerances.

Third, other FQPA provisions further specify how EPA must deal with scientific uncertainty. The FQPA directs EPA to act on the basis of available information on the special susceptibility of infants and children, including neurological differences between adults and infants and children, and EPA must apply an additional tenfold margin of safety to account for gaps in data or evidence of pre- or post-natal toxicity to children. 21 U.S.C. § 346a(b)(2)(C).

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[50] The court's reasoning (*id.*) applies with even greater force to the FFDCA standard, as amended by the FQPA.

> Section 408 of the FDCA authorizes the Secretary of HEW to establish tolerances for pesticide residues on or in raw agricultural commodities 'to the extent necessary to protect the public health.' The section also authorizes the setting of a zero tolerance (no residue) level 'if the scientific data before the Secretary does not justify the establishment of a greater tolerance.' We need not pause to plumb the obvious ambiguities in this language since both Senate and House Committee Reports make the intended meaning of this section indisputably clear:
>
> 'Before any pesticide-chemical residue may remain in or on a raw agricultural commodity, scientific data must be presented to show that the pesticide-chemical residue is safe from the standpoint of the food consumer. The burden is on the person proposing the tolerance or exemption to establish the safety of such pesticide-chemical residue.'

[51] The Pruitt Order states that EPA proposed to revoke all chlorpyrifos tolerances based in part on uncertainty surrounding the correlation between chlorpyrifos exposures and longlasting neurodevelopmental harm. 82 Fed. Reg. at 16,583, 16,590. However, EPA proposed to revoke chlorpyrifos tolerances because it could not find chlorpyrifos safe. To the extent the Pruitt Order is referring to the requirement that EPA be able to find safety in order to retain tolerances, that is what Congress has mandated.

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Congress specifically directed EPA to act to protect children where scientific evidence shows they are at risk of harm and it will take time to fill in gaps in the data.

In 2014, EPA retained the FQPA tenfold safety factor because of gaps in scientific information on the mode of action and exposure levels by which chlorpyrifos causes damage to children's brains. It recognized, however, that the 2014 risk assessment was under-protective because it continued to use cholinesterase inhibition as the regulatory endpoint, and that brain damage to children has resulted from lower exposure levels. In the face of this evidence, EPA also recognized that it needed to lower its regulatory endpoint or have additional safety factors to protect children's brains, and the 2016 SAP concurred. 2016 RHHRA at 13-14; 2016 SAP at 18-19.

The uncertainties go to the precise exposure level to use or additional safety factors to include in establishing a brain-protective regulatory endpoint. That uncertainty offers no reason to retain tolerances, however. In 2014, even using a poisoning regulatory endpoint that is not protective of children's brains, EPA found chlorpyrifos unsafe due to drinking water contamination. When it developed a regulatory endpoint that would protect children's brains, it found chlorpyrifos unsafe every way people are exposed to it with young children exposed to 140 times safe levels in food.[52] More study will simply confirm how hazardous and devastating this pesticide can be. Congress decided not to expose children to such risks by precluding EPA from maintaining tolerances when it cannot find a reasonable certainty of no harm from the pesticide.

3. The Pruitt Order Fails to Address Significant Concerns Raised in Comments that EPA's 2014 Risk Assessment and Proposed Revocation Fail to Protect Children.

The Pruitt Order indicates that EPA decided that the science regarding neurodevelopmental harm from chlorpyrifos remains unresolved and warrants further study before final regulatory action "[f]ollowing a review of comments" on the proposed revocation and 2016 risk assessment. 82 Fed. Reg. at 16,583. While it is typical for EPA to prepare a response to comments as part of a rulemaking, no response to comments document is in the administrative records for the chlorpyrifos registration review or the proposed revocation.

Agencies need to "consider and respond to significant comments received during the period for public comment" on proposed rules. *Perez v. Mortgage Bankers Ass'n*, 135 S. Ct. 1199, 1203 (2015); *see also* 5 U.S.C. § 553(c) (agency must give consideration to relevant matter, including data and arguments submitted during the comment period on proposed rules). Of particular relevance to this proceeding, when resolving a petition to revoke tolerances and deciding to leave a tolerance in effect, EPA must consider "information available to the Administrator" and specifically information relevant to such statutorily mandated considerations as pre- and post-natal neurotoxicity, children's exposures, population sensitivities, and gaps in

[52] If scientific uncertainties prevent EPA from identifying an acceptable exposure level that will prevent damage to children's brains, EPA must use additional safety factors due to pre-natal and post-natal neurotoxicity from chlorpyrifos. See Earthjustice, et al., Comments on EPA Proposal to Revoke Chlorpyrifos Tolerances (Jan. 17, 2017) at 2-11; 2016 SAP 18-19.

information. 21 U.S.C. § 346a(b)(2)(C)-(D) and § 346a(d)(4)(A); *see also* Dichlorvos (DDVP); Order Denying NRDC's Objections and Requests for Hearing, 73 Fed. Reg. 42683, 42696 (July 23, 2008) (EPA recognizes its obligation to provide a reasoned explanation for its treatment of significant comments when acting on petitions to revoke tolerances).

While EPA has apparently heeded some unspecified and vaguely referenced comments from Dow Agrosciences and others who want to retain chlorpyrifos tolerances, it is silent as to the multiple and extensive comments offering scientific reasons why the 2014 risk assessment and proposed revocation do not protect children and violate governing legal standards.

Particularly formidable are the numerous, well-supported comments from scientists, health professionals, and farmworker and health advocates making the case that EPA is failing to protect against the most sensitive health effect — harm to children's developing brains – because the 2014 risk assessment and proposed revocation use 10% cholinesterase inhibition as the regulatory endpoint.[53] If EPA had either lowered its regulatory endpoint or used the traditional and FQPA safety factors to guard against such brain impairments, it would have, as it did in 2016, found unsafe exposures in food, from drift 300 feet or more from the application site, and in drinking water nationwide. 2016 RHHRA at 23-24, 30-33.[54]

In denying the 2007 Petition, EPA did not disavow its prior findings that chlorpyrifos is unsafe. Nor could it credibly do so in light of the overwhelming scientific evidence correlating low-level chlorpyrifos exposures with damage to children's developing brains. If EPA were to modify the particular brain-protective endpoint used in the 2016 risk assessment, it would need to ensure that the endpoint selected, possibly coupled with additional safety factors, would produce a risk assessment that protects children from permanent brain damage from chlorpyrifos exposures. The only way EPA can ensure there is reasonable certainty of no harm from chlorpyrifos exposures is to account for the evidence of such harm from exposures far below the regulatory endpoint underpinning the current tolerances.

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[53] *See, e.g.,* 2015 Farmworker Comments; Comments to EPA from Environmental Health Scientists and Healthcare Professionals in support of EPA's 2016 Revised Human Health Risk Assessment and the 2015 proposed tolerance revocation for chlorpyrifos (Jan. 17, 2017) (EPA-HQ-OPP-2015-0653-0587); Comments to EPA submitted on behalf of University of California, Davis scientists with the UC Davis Environmental Health Sciences Center and the UC Davis Center for Children's Environmental Health in support of EPA's 2016 Revised Human Health Risk Assessment in conjunction with the 2015 proposed rulemaking to revoke tolerances for chlorpyrifos (Jan. 17, 2017) (EPA-HQ-OPP-2015-0653-0640); Comments to EPA from Environmental Health Scientists and Healthcare Professionals in support of EPA's Proposal to Revoke Chlorpyrifos Food Residue Tolerances (Jan. 5, 2016) (EPA-HQ-OPP-2015-0653-0374); Comment submitted by Harry Wang, Vice-President, Physicians for Social Responsibility/Sacramento (Apr. 30, 2015) (EPA-HQ-OPP-2008-0850-0834).

[54] *See also* Earthjustice, *et al.*, Comments on EPA Proposal to Revoke Chlorpyrifos Tolerances (Jan. 5, 2016) at 8-10 (If EPA had used a 1000X safety factor, it would have found risks of concern to all children from food, even without using an endpoint that reflects the harm to the developing brain, with children 1-2 years old facing the highest risks, more than 2 times EPA's level of concern.).

Public comments raised several other significant issues that EPA would need to address if it persists in leaving chlorpyrifos tolerances in place in response to the 2007 Petition.[55] First, the farmworker and health advocate comments disputed EPA's legal authority to ignore inhalation exposures from chlorpyrifos spraying, which EPA tried to justify because the labels prohibit allowing a pesticide to drift onto people. Chlorpyrifos drift poisons people every year, documenting that the label prohibition is ineffective and greater safeguards are needed to provide reasonable certainty of no harm. 2015 Farmworker Comments at 43-49.

Second, while EPA recognized in its 2011 preliminary risk assessment that chlorpyrifos has a propensity to volatilize after application and move large distances as vapor, and that buffers as large as 4000 feet may be necessary to prevent harm from exposures to chlorpyrifos vapors, it ultimately disregarded volatilization exposures based on two rat studies submitted by Dow Agrosciences that purport to show that it is impossible to inhale enough chlorpyrifos to produce an adverse effect. Public comments pointed out that the Dow studies suffer from significant flaws because they fail to address temperature and soil moisture impacts on volatilization, individual variation, a lack of controls to ensure the experiment could detect cholinesterase inhibition, and biomonitoring and incident data showing harmful exposures at distances as large as one-half mile from application sites. 2015 Farmworker Comments at 50-58.

Third, the comments submitted California incident data documenting poisonings from chlorpyrifos at far greater distances than the spray drift buffers put in place by the registrants in 2012. These real-life impacts show that reasonable certainty of harm persists. This year on Cinco de Mayo, roughly one dozen farmworkers in Kern County, California, were poisoned and a total of 50 put at risk from spray drift of what has been reported to be chlorpyrifos.[56] Local news described how "twelve people reported symptoms of vomiting [and] nausea and one person fainted." *Id.* The farmworkers were harvesting cabbage at a farm that does not use chlorpyrifos when drift from a nearby field led workers to complain of "a bad odor, nausea and vomiting."[57] Following the incident, the Kern County Department of Agriculture and Measurement Standards stated that testing was still underway, but confirmed that they are investigating a ground application of chlorpyrifos that took place one-half mile from where the poisoning occurred.

Fourth, not only did EPA continue to use poisoning as its regulatory endpoint, it used a model developed by Dow AgroSciences to try to pinpoint the exposures that will produce 10% cholinesterase inhibition in people. Public comments objected to use of the model because, in February 2011, EPA's Scientific Advisory Panel found numerous flaws in the model, using terms like "very problematic," "cursory," "overstated," "inadequate," "inaccurate," "imprecise,"

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[55] Objectors incorporate by reference all comments submitted by Objectors under docket numbers EPA-HQ-OPP-2007-1005, EPA-HQ-OPP-2008-0850, and EPA-HQ-OPP-2015-0653.

[56] Tom Philpott, *Trump's EPA Greenlights a Nasty Chemical. A Month Later, It Poisons a Bunch of Farmworkers.*, Mother Jones (May 15, 2017, 6:00 AM) http://www.motherjones.com/environment/2017/05/california-farm-workers-just-got-poisoned-nasty-pesticide-greenlghted-trump.

[57] Oliver Milman, *Pesticide that Trump's EPA refused to ban blamed for sickening farm workers*, The Guardian (May 17, 2017, 7:00 AM), https://www.theguardian.com/environment/2017/may/17/pesticide-trump-ban-california-farm-workers-sick.

and "incomplete."[58] Dow made some changes in the model, but EPA did not obtain another review by its Scientific Advisory Panel.

In addition, the model is based on ethically and scientifically deficient studies. Congress has required that human testing must meet minimal ethical and scientific standards before EPA can rely on such tests. An EPA ethics advisor found that the key Dow human study fell short of meeting informed consent requirements, and EPA's Human Studies Review Board found the study scientifically deficient in two respects that have not been corrected. EPA has since strengthened its regulatory standards governing use of intentional human dosing studies, yet EPA failed to resubmit the study to the Human Studies Review Board. EPA has provided no credible basis for relying on human testing without subjecting it to such scrutiny and without confronting the earlier findings of ethical and scientific shortcomings. 2015 Farmworker Comments at 36-42.

Based on the Dow model, EPA eliminated the inter-species safety factor altogether, and it shrank the intra-species safety factor from 10X to 4X-5X for children, although it retained a 10X for women of childbearing age since the Dow model lacks data reflecting how a pregnant woman's body processes chlorpyrifos. The result — under the 2014 risk assessment —EPA will allow chlorpyrifos exposures to be an order of magnitude higher for pregnant women and even higher still for children than would be allowed if traditional safety factors had been retained. Comments argued that EPA cannot use Dow's model to eliminate or reduce the safety factors in light of the neurodevelopmental effects that occur at lower doses than those used in the model. 2015 Farmworker Comments at 28-32. If EPA had heeded these comments and had retained the traditional safety factors, it would have found in 2014 that chlorpyrifos is unsafe on food as well as in drinking water, and that children are at even greater risk from chlorpyrifos drift and workers from handling the pesticide or re-entering fields shortly after chlorpyrifos spraying.

C. Widespread Use of Chlorpyrifos in Agriculture is Legally Irrelevant Because Congress Made Protecting Food Safety and Preventing Neurodevelopmental Harm to Children Paramount.

The Pruitt Order states:

> Although not a legal consideration, it is important to recognize that for many decades chlorpyrifos has been and remains one of the most widely used pesticides in the United States, making any decision to retain or remove this pesticide from the market an extremely significant policy choice.

82 Fed. Reg. at 16,590; *see also id.* at 16,584 ("chlorpyrifos is currently the only cost-effective choice for control of certain insect pests."). The Pruitt Order then cites the significance of the decision as a reason for further study of the risks before taking final regulatory action. *Id.*

EPA issued a press release on the Pruitt Order noting that chlorpyrifos is "one of the most widely used pesticides in the world" and quoting EPA Administrator Scott Pruitt as saying, "We need to provide regulatory certainty to the thousands of American farms that rely on

[58] Meeting minutes, report, and background material is available in Docket EPA-HQ-OPP-2010-0588 and on the SAP meetings website at: http://www.epa.gov/scipoly/sap/meetings/2011/021511meeting.html.

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chlorpyrifos." The EPA press release included a statement from Sheryl Kunickis, director of the Office of Pest Management Policy at the U.S. Department of Agriculture ("USDA"), endorsing the Pruitt Order because it "frees American farmers from significant trade disruptions that could have been caused by an unnecessary, unilateral revocation of chlorpyrifos tolerances in the United States."[59] EPA released another press statement on April 5, 2017, compiling statements from USDA and various agricultural associations praising EPA's decision not to ban chlorpyrifos.[60]

As the Pruitt Order acknowledges, however, EPA must make food tolerance decisions based on safety and in particular whether EPA can find that there is a reasonable certainty of no harm from the pesticide. Congress decided long ago that the safety of our food cannot be sacrificed, and in 1996, it expanded that mandate to aggregate exposures to a pesticide in food, drinking water, and pesticide drift. EPA cannot leave tolerances in place in the absence of a finding of safety, no matter how widely used the pesticide is.[61] Indeed, widespread use of chlorpyrifos cuts the other way because its use exposes children and communities throughout the country to poisoning and brain damage risks, making the Administrator's decision to delay protections even more egregious.

D. The Deadline for Completing Registration Review for All Older Pesticides is Not A License to Maintain Tolerances for Pesticides That are Unsafe

As a final reason for denying the 2007 Petition and leaving chlorpyrifos tolerances in place, EPA claims the right to re-order the priorities that had been set by previous administrations. It asserts that it can put off deciding whether to revoke chlorpyrifos tolerances for years as long as it does so before October 1, 2022, the deadline for completing registration review of all older pesticides. 82 Fed. Reg. 16,581, 16,590 (April 5, 2017); *see* 7 U.S.C. § 136a (g)(1)(A)(iii)(I) (registration review deadline). This position is indefensible because it ignores other legal mandates and the scientific evidence that precludes the safety finding that is necessary to leave chlorpyrifos tolerances in place.

---

[59] Press Release, U.S. EPA, EPA Administrator Pruitt Denies Petition to Ban Widely Used Pesticide (Mar. 29, 2017), https://www.epa.gov/newsreleases/epa-administrator-pruitt-denies-petition-ban-widely-used-pesticide-0.

[60] Press Release, U.S. EPA, Agriculture Community Reacts to Recent EPA Action (Apr. 5, 2017), https://www.epa.gov/newsreleases/agriculture-community-reacts-recent-epa-action.

[61] Chlorpyrifos usage has declined over time, as many farmers have shifted to less toxic alternatives, even before EPA's proposal to revoke chlorpyrifos tolerances. Annual agricultural pesticide use data compiled by the U.S. Geological Survey's Pesticide National Synthesis Project show that, since the mid-1990s, chlorpyrifos use has declined. https://water.usgs.gov/nawqa/pnsp/usage/maps/show_map.php year=2014&map=CHLORPYRIFOS&hilo=L&disp=Chlorpyrifos. Additionally, in California, the combined use of chlorpyrifos in alfalfa, almonds, citrus, and cotton decreased from 2006 -2012. While overall use increased in 2013 and 2014, it remained below the amount used in 2006. "Identifying and Managing Critical Uses of Chlorpyrifos Against Key Pests of Alfalfa, Almonds, Citrus and Cotton" (UC IPM report for CA DPR), August 31, 2016 at 3.

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Under the FFDCA, any person may file a petition to revoke tolerances. 21 U.S.C. § 346a(d)(1). The Administrator must give the petition due consideration and issue either a proposed or final regulation to revoke the tolerances or an order denying the petition. *Id.* § 346a(d)(4)(A). While the FFDCA does not establish a specific deadline for acting on petitions to revoke tolerances, the Administrative Procedure Act requires that federal agencies respond to petitions "within a reasonable time." 5 U.S.C. § 555(b). In 2015, the Ninth Circuit held that EPA's delay in responding to the 2007 Petition was unreasonable and "egregious" and set a timeline for EPA to respond. *In re Pesticide Action Network North America v. EPA*, 798 F.3d 809, 811 (9th Cir. 2015). In 2016, the court reiterated its concerns over any further delay, stating that any "claim of premature rulemaking has come and gone." *In re PANNA*, No. 14-72794, Order (9th Cir. Aug. 12, 2016).

The fact that Congress established an October 1, 2022, deadline for EPA to complete registration review of all older pesticides is no license for EPA to continue to exacerbate its unreasonable delay in acting on the 2007 Petition seeking revocation of chlorpyrifos tolerances. First, the registration review provision states that: "Nothing in this subsection shall prohibit the Administrator from undertaking any other review of a pesticide . . ." 7 U.S.C. § 136a(g)(1)(C). This clause prohibits EPA from relying on the registration review deadline to forestall other legally required or scientifically compelled regulatory action.

Second, it is FIFRA, not the FFDCA, that establishes the registration review process. While registration review will include an assessment of food and drinking water risks and determine whether food tolerances may be retained or must be revoked, registration review is far broader in scope than the issues arising under the FFDCA. It will examine all uses of a pesticide, not only food uses, and risks to wildlife, waterbodies, and workers in addition to food and drinking water. In addition, FFDCA tolerance determinations must be made solely on the basis of safety, while nonfood use decisions under FIFRA are based on a balancing of risks and benefits. *Compare* 21 U.S.C. § 346a(b)(2)(A)(i) & (ii) (FFDCA standard and determination of safety), *with* 7 U.S.C. § 136(bb) (FIFRA definition of "unreasonable adverse effects on the environment"). Even where EPA accelerates food safety determinations, as it had done for chlorpyrifos, other FIFRA assessments and decisions lie ahead and remain subject to the 2022 registration review deadline.

EPA's review of chlorpyrifos has proceeded to a point of no return. The agency developed methods for addressing spray drift, volatilization, and epidemiology studies, and released human health risk assessments that document unsafe exposures from chlorpyrifos. EPA made findings that chlorpyrifos is unsafe in 2014 directed at drinking water contamination, *see, e.g.*, 80 Fed. Reg. 69,080, and expanded those findings in November 2016 to every way people are exposed to chlorpyrifos. 81 Fed. Reg. at 81,050. The law is clear. EPA can leave food tolerances in place only if it can find the pesticide safe. Because EPA has found chlorpyrifos to be unsafe, it lacks the authority to retain the food tolerances. It cannot lawfully issue an order denying the 2007 Petition, but instead must comply with the FFDCA mandate to revoke tolerances for this unsafe pesticide.

In claiming the authority to postpone revoking chlorpyrifos tolerances despite its own scientific findings, EPA cites the prerogative of a new presidential administration to make policy choices that differ from its predecessor, citing *Fed. Commc'n Comm'n v. Fox Television*

Stations, 556 U.S. 502 (2009). 82 Fed. Reg. at 16,589. *Fox Television*, however, requires agencies to provide a reasoned explanation that comports with *Motor Vehicles Mfrs. Ass'n v. State Farm Mut. Automobile Ins. Co.*, 463 U.S. 43 (1983), and to address prior factual findings and circumstances that underlay the earlier agency decision. 556 U.S. at 515-16. EPA provided no such explanation, and it has not disavowed its previous findings that chlorpyrifos is unsafe. Nor could it given the extensive scientific record documenting the damage chlorpyrifos causes to children's brains at low-level exposures. Whatever leeway a new administration has to make its own policy choices does not extend to factual determinations, like EPA's findings that chlorpyrifos is unsafe. Nor does that latitude allow the new administration to break the law by leaving tolerances in place in the face of findings of such serious harm to children.

CONCLUSION

For these reasons, EPA must reverse the Pruitt Order and revoke all chlorpyrifos tolerances. This misguided Order and the delay it has spurred threaten to expose countless children and communities to chlorpyrifos well into the future. People will needlessly suffer from poisonings from chlorpyrifos drift. Parents will watch their children struggle with attention disorders and impaired brain functioning that hinders their ability to learn and play, and the children will experience lifelong deficits that make it harder for them to achieve their full potential and dreams. Prolonging revocation of chlorpyrifos tolerances, as required by the law and science, is not only unlawful, but also callous and heartless. EPA should rule on these objections within 60 days and expedite revocation of all chlorpyrifos tolerance.

Submitted by:

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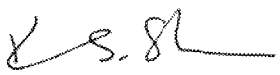
On behalf of:



Kristin Schafer
Executive Director
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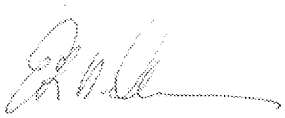

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/s/ *Virginia Ruiz*
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/s/ *Brent Wilkes*
Brent Wilkes, Executive Director
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/s/ *Jeannie Economos*
Jeannie Economos
Pesticide Safety and Environmental Health Project Coordinator
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/s/ *Elena Rios*
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/s/ *Mark Magana*
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801 Pennsylvania Avenue NW, Suite 1010
Washington, DC 20036

ED_004126_00000465-00044

Message

From: Kaiser, Sven-Erik [Kaiser.Sven-Erik@epa.gov]
Sent: 12/15/2017 6:03:23 PM
Subject: Notification: EPA Releases Neonicotinoid Assessments for Public Comment

Heads up that today EPA is releasing preliminary ecological and human health risk assessments for these neonicotinoid insecticides -- clothianidin, thiamethoxam, and dinotefuran -- and a preliminary ecological risk assessment for imidacloprid, assessing risks to birds, mammals, non-target insects, and plants. Preliminary pollinator-only risk assessments for these chemicals were published for comment in 2016 and 2017, and preliminary human health and ecological assessments (for aquatic species only) for imidacloprid were also released in 2017.

EPA is also releasing new cotton and citrus benefits assessments for foliar applications of the neonicotinoids as well as its response to public comments on the 2014 Benefits of Neonicotinoid Seed Treatment to Soybean Production.

These documents are all being made available in the dockets in advance of the forthcoming Federal Register Notice that will open the public comment period.

Once the comment period opens, EPA is especially interested in public comment on the benefits for cotton and citrus, since previous assessments identified potential risks to pollinators. We believe early input from the public will be helpful in developing possible mitigation options that may be needed to address risks to bees. Among the benefits identified, the neonicotinoids were found to be critical for management of Asian citrus psyllid -- which causes citrus greening, a devastating pest for citrus growers, and for control of plant bugs and stink bugs in cotton.

EPA encourages stakeholders and interested members of the public to provide comments on these assessments in the dockets linked below. The comment period begins when the Federal Register notice is published and will be open for 60 days. EPA may revise the assessments based on information and comments received. The agency plans to release the final pollinator risk assessments and proposed interim decisions for these chemicals in mid-2018.

Imidacloprid registration review docket EPA-HQ-OPP-2008-0844

Clothianidin registration review docket EPA-HQ-OPP-2011-0865

Thiamethoxam registration review docket EPA-HQ-OPP-2011-0581

Dinotefuran registration review docket EPA-HQ-OPP-2011-0920

Please let me know if any questions. Thanks,
Sven

Sven-Erik Kaiser
U.S. EPA
Office of Congressional and Intergovernmental Relations
1200 Pennsylvania Ave., NW (1305A)
Washington, DC 20460
202-566-2753 (o)
Ex. 6 (c)

Message

From: Kyle Harris [kharris@corn.org]
Sent: 1/9/2018 2:04:11 PM
To: Subramanian, Hema [Subramanian.Hema@epa.gov]; Sands, Jeffrey [sands.jeffrey@epa.gov]
CC: David M. (Max) Williamson [maxwilliamson@williamsonlawpolicy.com]
Subject: RE: Ag Biogenic CO2

Hema,

Thank you! My CAA Attorney, Max Williamson, will be attending with me. Would you be able to include him on the outlook invite?

Thanks in advance,

Kyle

Kyle A. Harris
Manager, Environmental Affairs/ Workplace Safety
Corn Refiners Association
www.corn.org
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From: Subramanian, Hema [mailto:Subramanian.Hema@epa.gov]
Sent: Monday, January 08, 2018 5:11 PM
To: Kyle Harris <kharris@corn.org>; Sands, Jeffrey <sands.jeffrey@epa.gov>
Subject: RE: Ag Biogenic CO2

Kyle,

I am Jeff's Special Assistant and can help coordinate this meeting. Jeff can meet with you in his office at 3 pm on the 17th. I'll send you a calendar invite with further details, but just let me know if a better time works for you.

Thank you,
---Hema.

Hema Subramanian
Special Assistant to the Senior Advisor for Agriculture (detail)
Office of the Administrator
U.S. Environmental Protection Agency

1200 Pennsylvania Avenue, NW
Washington, DC 20460
Phone (202) 564-5041
subramanian.hema@epa.gov

From: Kyle Harris [mailto:kharris@corn.org]
Sent: Monday, January 08, 2018 1:08 PM
To: Sands, Jeffrey <sands.jeffrey@epa.gov>
Cc: Subramanian, Hema <Subramanian.Hema@epa.gov>
Subject: RE: Ag Biogenic CO2

Jeff,

Thanks for getting back to me, and I hope the New Year is treating you well!

I am flexible next Wednesday 17th, please advise on any times that might work on your end, I am able to come to EPA headquarters.

Best Regards,

Kyle

Kyle A. Harris, Esq.
Manager, Environmental Affairs/ Workplace Safety
Corn Refiners Association
www.corn.org
1701 Pennsylvania Ave NW
Suite 950, Washington, DC 20006
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Cell: (

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Please consider the environment before printing this email

From: Sands, Jeffrey [mailto:sands.jeffrey@epa.gov]
Sent: Monday, January 08, 2018 12:57 PM
To: Kyle Harris <kharris@corn.org>
Cc: Subramanian, Hema <Subramanian.Hema@epa.gov>
Subject: RE: Ag Biogenic CO2

Kyle,

Hope this note finds you well. How does next Wednesday look on your end for a meeting?

Thanks for your consideration. Look forward to speaking with you soon.

Best,
Jeff

From: Kyle Harris [mailto:kharris@corn.org]
Sent: Friday, January 5, 2018 12:47 PM
To: Sands, Jeffrey <sands.jeffrey@epa.gov>
Subject: Ag Biogenic CO2

My name is Kyle Harris and I manage the Environmental Affairs for the Corn Refiners Association, who chairs the Biogenic CO2 Coalition (please find our 1-pager attached).

I would appreciate the opportunity to come and brief you on our issue, which involves air emissions from the processing and/or combustion of short-cycle herbaceous crops. The Ag sector is poised to invest billions of dollars throughout the United States to expand the bioeconomy, which can provide 21st century solutions to economic growth, domestic energy security, and environmental benefits in the form of bioenergy, biofuels, and bioproducts made from corn, oilseeds, crop residues, farm wastes and other agricultural feedstocks.

We have been working on this issue closely with OAR, and Alex Dominguez has kindly given me your contact information.

Please advise any times that may work for you and your team where we could sit down and further discuss.

Thanks in advance,

Kyle

Kyle A. Harris, Esq.
Manager, Environmental Affairs/ Workplace Safety
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Message

From: Subramanian, Hema [Subramanian.Hema@epa.gov]
Sent: 1/8/2018 10:11:17 PM
To: Kyle Harris [kharris@corn.org]; Sands, Jeffrey [sands.jeffrey@epa.gov]
Subject: RE: Ag Biogenic CO2

Kyle,

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---Hema.

Hema Subramanian
Special Assistant to the Senior Advisor for Agriculture (detail)
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Phone (202) 564-5041
subramanian.hema@epa.gov

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Cc: Subramanian, Hema <Subramanian.Hema@epa.gov>
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Kyle

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Cc: Subramanian, Hema <Subramanian.Hema@epa.gov>
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Kyle

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Message

From: Kyle Harris [kharris@corn.org]
Sent: 1/8/2018 6:07:50 PM
To: Sands, Jeffrey [sands.jeffrey@epa.gov]
CC: Subramanian, Hema [Subramanian.Hema@epa.gov]
Subject: RE: Ag Biogenic CO2

Jeff,

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I am flexible next Wednesday 17th, please advise on any times that might work on your end, I am able to come to EPA headquarters.

Best Regards,

Kyle

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Cc: Subramanian, Hema <Subramanian.Hema@epa.gov>
Subject: RE: Ag Biogenic CO2

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Best,
Jeff

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Sent: Friday, January 5, 2018 12:47 PM
To: Sands, Jeffrey <sands.jeffrey@epa.gov>
Subject: Ag Biogenic CO2

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Kyle

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Please consider the environment before printing this email

Message

From: Dominguez, Alexander [dominguez.alexander@epa.gov]
Sent: 1/8/2018 4:07:16 PM
To: Sands, Jeffrey [sands.jeffrey@epa.gov]
Subject: FW: Biogenic CO2- Thank You

Hey Jeff,

Hope you had a good weekend. Kyle Harris from the Corn Refiners Association is looking connect with you regarding biogenic CO2. Disregard if you have already received an email from him, but if not I can connect you two or you can just reach out – whatever you prefer. Not sure if Mandy has spoken with you on this but I'm happy to discuss if needed. Anything else just let me know.

Thanks,
Alex

Alex Dominguez
Policy Analyst to the Principal Deputy
Office of Air and Radiation
U.S. Environmental Protection Agency

From: Kyle Harris [mailto:kharris@corn.org]
Sent: Monday, January 8, 2018 10:30 AM
To: Dominguez, Alexander <dominguez.alexander@epa.gov>
Subject: RE: Biogenic CO2- Thank You

Alex,

I hope the new year is treating you well! I was wondering if you had time for a quick phone call this week for a brief update on where things might be with Biogenic. I have also never been able to get ahold of Jeff Sands, so any advice on getting ahold of him would be appreciated!

Best Regards,

Kyle

Kyle A. Harris, Esq.
Manager, Environmental Affairs/ Workplace Safety
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From: Dominguez, Alexander [mailto:dominguez.alexander@epa.gov]
Sent: Wednesday, November 08, 2017 10:38 PM
To: Kyle Harris <kharris@corn.org>
Cc: Atkinson, Emily <Atkinson.Emily@epa.gov>
Subject: RE: Biogenic CO2- Thank You

Hey Kyle,

Looping in Emily Atkinson who can assist with the logistics. As I mentioned, I am not entirely sure how the scheduling process works for the AA (let alone in a transition), but Emily might be able to provide a little more clarity.

Best,
Alex

Alex Dominguez
Policy Analyst to the Principal Deputy Assistant Administrator
Office of Air and Radiation
U.S. Environmental Protection Agency

From: Kyle Harris [mailto:kharris@corn.org]
Sent: Wednesday, November 8, 2017 4:10 PM
To: Dominguez, Alexander <dominguez.alexander@epa.gov>
Subject: Biogenic CO2- Thank You

Alex,

Thanks again for speaking with me today.

As follow up, I would appreciate the opportunity to come and speak with Mandy and brief the new AA for OAR on the Ag Biogenic Issue once confirmed.

If you could point me in the right direction for getting this scheduled that would be great!

Thanks in advance,

Kyle

Kyle A. Harris, Esq.
Manager, Environmental Affairs/ Workplace Safety
Corn Refiners Association
www.corn.org
1701 Pennsylvania Ave NW
Suite 950, Washington, DC 20006
Office
Cell: (Ex. 6

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Please consider the environment before printing this email

Message

From: Subramanian, Hema [Subramanian.Hema@epa.gov]
Sent: 12/14/2017 3:48:54 PM
To: Sands, Jeffrey [sands.jeffrey@epa.gov]
Subject: RE: Ag Biogenic CO2

Just want to double check – did you want me to set this meeting up? (Couldn't tell from the "FYI" if you wanted to handle this one on your own and just let me know…)

Hema Subramanian
Special Assistant to the Senior Advisor for Agriculture (detail)
Office of the Administrator
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington, DC 20460
Phone (202) 564-5041
subramanian.hema@epa.gov

From: Subramanian, Hema
Sent: Tuesday, December 12, 2017 10:45 AM
To: Sands, Jeffrey <sands.jeffrey@epa.gov>
Subject: RE: Ag Biogenic CO2

Thanks, just let me know if you'd like me to coordinate with Alex Dominguez and set up this meeting. Hope Denver is going well!

Hema Subramanian
Special Assistant to the Senior Advisor for Agriculture (detail)
Office of the Administrator
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington, DC 20460
Phone (202) 564-5041
subramanian.hema@epa.gov

From: Sands, Jeffrey
Sent: Tuesday, December 12, 2017 10:39 AM
To: Subramanian, Hema <Subramanian.Hema@epa.gov>
Subject: Fwd: Ag Biogenic CO2

FYI….

Sent from my iPhone

Begin forwarded message:

> **From:** Kyle Harris <kharris@corn.org>
> **Date:** December 12, 2017 at 8:37:08 AM MST

To: "sands.jeffrey@epa.gov" <sands.jeffrey@epa.gov>
Subject: Ag Biogenic CO2

My name is Kyle Harris and I manage the Environmental Affairs for the Corn Refiners Association, who chairs the Biogenic CO2 Coalition (please find our 1-pager attached).

I would appreciate the opportunity to come and brief you on our issue, which involves air emissions from the processing and/or combustion of short-cycle herbaceous crops. The Ag sector is poised to invest billions of dollars throughout the United States to expand the bioeconomy, which can provide 21st century solutions to economic growth, domestic energy security, and environmental benefits in the form of bioenergy, biofuels, and bioproducts made from corn, oilseeds, crop residues, farm wastes and other agricultural feedstocks.

We have been working on this issue closely with OAR, and Alex Dominguez has kindly given me your contact information.

Please advise any times that may work for you and your team where we could sit down and further discuss.

Thanks in advance,

Kyle

Kyle A. Harris, Esq.
Manager, Environmental Affairs/ Workplace Safety
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Cell: Ex. 6

Message

From: Subramanian, Hema [Subramanian.Hema@epa.gov]
Sent: 12/14/2017 1:52:25 PM
To: Sands, Jeffrey [sands.jeffrey@epa.gov]
Subject: FYI - Bloomberg BNA yesterday on WPS

https://www.bna.com/epa-consider-reducing-n73014473148/
December 13, 2017

EPA to Consider Reducing Farmworker Pesticide Protections

FREE TRIAL

From Occupational Safety & Health Reporter (SM)
By Paul Shukovsky

The EPA is considering changes to an Obama-era rule that was meant to minimize pesticide exposure for farmworkers, sources familiar with agency deliberations told Bloomberg Environment.

At issue is the Environmental Protection Agency's Worker Protection Standard for pesticides, a rule issued in 2015 that has engendered opposition from the agricultural community, which says elements of the rule are too expensive.

The EPA is weighing whether to review the current provisions that require pesticide handlers be at least 18 years old, establish application exclusion zones intended to keep people away from pesticide spraying equipment for periods of time, and allow farmworkers to pick a "designated representative" to get pesticide information on a worker's behalf, according to a government employee who spoke on condition of anonymity for fear of losing their job.

EPA spokesman Robert Daguillard confirmed that the rules are under review, but did not specify which provisions.

Pesticide Policy

The possibility of changes to the three provisions was briefly discussed Dec. 12 at a meeting of the EPA's Office of Pesticide Policy, Scott Dahlman, policy director for Oregonians for Food and Shelter, who attended the meeting, told Bloomberg Environment.

Members of Dahlman's coalition—representing farmers, forest-product companies, pesticide makers, and agriculturalists who use fertilizer, pesticides, and biotechnology—talked with Kevin Keaney, the head of worker safety in the EPA's pesticides office, who said the worker protection rule was being revisited, Dahlman told Bloomberg Environment.

"They didn't say what kind of changes they were considering," Dahlman said. "They told us that they were working on those three issues generally," referring to worker age, application exclusion zones, and the "designated representative."

His group's membership includes a broad representation of agriculture organizations and companies such as J.R. Simplot Co., Weyerhaeuser Co., Monsanto, Dow AgroSciences LLC, and Syngenta Crop Protection Inc.

The EPA's participants didn't specify what they had in mind, given that the meeting was more focused on a proposed worker protection standard in Oregon, Dahlman said.

"We generally support it," Dahlman said of the EPA's plan to review the rule's provisions. "When you issue a huge new rule, you get everything out there and you realize that there are some unintended consequences."

Keaney said Dec. 12 that a meeting happened, but did not provide details of the meeting's content, and referred Bloomberg Environment to the agency's media relations office.

Activist Visits

The "designated representative" provision has been among the rule's most-discussed elements, with the agriculture industry raising concerns that farm labor activists demand of farmers the pesticide-application records required under the rule.

"There are concerns about who might have access to that information and what it might be used for," Dahlman said.

The rule requires that an establishment display the records for 30 days after pesticide application in a place where workers or handlers are likely to pass, and then maintain those records for two years.

The EPA, in advance of adopting the 2015 rule revision, had proposed prohibiting people younger than 16 from handling pesticides, but ultimately settled on 18 years of age.

"States primarily supported EPA's proposal to establish a minimum age of 16, noting that establishing a minimum age of 18 would require them to change their state laws," the agency said in the rule.

'We're In a New Environment'

A thorough revision of the Worker Protection Standard would be no easy feat for the agency; the EPA would have to start the rulemaking process from scratch, despite nearly 15 years of work spent on the 2015 rule.

The EPA worked hard to accommodate requests from the agriculture and farmworkers organizations in developing the standard and a related rule to tighten certification requirements for applicators of the most toxic pesticides, Keaney told an advisory panel Nov. 30.

"We thought we made great lengths in changing the regulations as a result of comment," Keaney told the EPA's Children's Health Protection Advisory Committee. "I thought we reached a good position in both regulations, so it is kind of discouraging to have it still second-guessed at this stage."

"We're in a new environment," Keaney added, presumably a reference to the agency's regulatory reform efforts under Administrator Scott Pruitt.

The farmworker rules also are entangled in a congressional fight to pass a bill vital to the Office of Pesticide Programs. Sen. Tom Udall (D-N.M.) has placed a hold on the Pesticide Registration

Improvement Extension Act (PRIA) (H.R. 1029), a bill to reauthorize the Office of Pesticide Programs' ability to collect industry fees that fund nearly one-third of the office's work.

Udall has said he will continue to block the bill from moving in the Senate until the EPA commits to fully implementing the pesticide safety rule.

Oregon Could Adopt Provisions

The federal application exclusion zone provisions raises issues balancing worker safety with the revenue stream of a farming operation, particularly in places where farm laborers' housing is on or near the fields where they work.

That part of the rule establishes zones where workers should be kept at least 25 to 100 feet away from the spraying area, depending on the method of application.

Oregon orchard owners, for example, are contesting a proposal by the state's occupational safety and health division to adopt a modified version of the federal exclusion zone rule on the grounds that farm laborer housing would be encompassed by the zones. They contend it could force them to remove fruit trees.

The proposed state rule would allow for occupants within 100 feet to remain indoors during pesticide application, Michael Wood, Oregon's state OSHA administrator, told Bloomberg Environment. The proposal requires occupants to evacuate for 15 minutes if they live within a 150-foot zone that would be required under the state proposal for pesticides requiring the use of a respirator.

Some worker housing could be classified as "shacks; cardboard windows and doors that don't close properly," Kate Suisman, a labor lawyer at the Northwest Workers' Justice Project, told Bloomberg Environment.

Workers don't know what they are being sprayed with, she said. "They're scared, they have health issues they feel are related to pesticides."

Small children living in farm labor camps are especially vulnerable to pesticide exposure, Suisman said.

"It is hard to prove causation between exposure and the many negative health outcomes for farm workers, and it will be even harder if information about what is sprayed is not available to workers and worker advocates," she said.

— With assistance from Tiffany Stecker

Try Occupational Safety & Health Reporter (SM)

Message

From: Beck, Nancy [Beck.Nancy@epa.gov]
Sent: 11/28/2017 1:39:57 PM
To: Sands, Jeffrey [sands.jeffrey@epa.gov]
Subject: FW: USDA Concerns with BEAD's Update to the Neonicotinoid Benefits Assessment for Soybeans
Attachments: Cover_Letter.pdf; Comment.pdf; neonic-efficacy_digital_29226.pd.pdf; Soybean R2C-Revision-Final_v2_clean.docx

---

Nancy B. Beck, Ph.D., DABT
Deputy Assistant Administrator, OCSPP
P: 202-564-1273
M: Ex. 6
beck.nancy@epa.gov

From: Keigwin, Richard
Sent: Monday, November 27, 2017 12:28 PM
To: Bertrand, Charlotte <Bertrand.Charlotte@epa.gov>; Beck, Nancy <Beck.Nancy@epa.gov>; Wise, Louise <Wise.Louise@epa.gov>; Dourson, Michael <dourson.michael@epa.gov>
Cc: Keller, Kaitlin <keller.kaitlin@epa.gov>; Dinkins, Darlene <Dinkins.Darlene@epa.gov>
Subject: USDA Concerns with BEAD's Update to the Neonicotinoid Benefits Assessment for Soybeans

Ex. 5 Deliberative Process (DP)

I've looked through BEAD's response (attached) and believe that we need to address all of the comments submitted. The comments are available in the public docket and to not address the comments would leave our response incomplete. It was the Center for Food Safety's report on pesticide seed treatments that initially prompted our original assessment of the benefits of neonic use on soybean seeds.

Rick Keigwin
Director, Office of Pesticide Programs
US Environmental Protection Agency

CENTER FOR
FOOD SAFETY

Dec. 22, 2014

OPP Docket
Environmental Protection Agency Docket Center
Washington, DC
Filed online at: *www.regulations.gov*

Re: Benefits of Neonicotinoid Seed Treatments to Soybean Production; Docket No. EPA–HQ–OPP–2014–073

Dear Sir/Madam,

We are pleased to submit this comment on the above-referenced docket on behalf of the **Center for Food Safety**, together with: **American Bird Conservancy, Beyond Pesticides, Beyond Toxics, California State Grange, Center for Biological Diversity, Ecological Farming Association, Endangered Species Coalition, Farm and Ranch Freedom Alliance, Food and Water Watch, Friends of the Earth, Institute for Agriculture and Trade Policy, National Family Farm Coalition, Northwest Center for Alternatives to Pesticides, Pesticide Action Network** and **Toxic Free North Carolina**. Our 16, non-profit, public interest groups address the assessment dated Oct. 15, 2014, by Myers and Hill, entitled: *Benefits of Neonicotinoid Seed Treatments to Soybean Production* (hereinafter, the "Assessment").

Introduction to Comment:

According to EPA's Assessment, neonicotinoid seed coatings are used on more than 23 million acres of soybeans in the United States, and more than one million pounds of these registered insecticides were applied to soybean seeds from 2008 - 2012. The Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) generally prohibits EPA from registering a pesticide, or from

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maintaining past registrations such as in the present situation, if their use would cause "unreasonable adverse effects on the environment." Under longstanding FIFRA practice, determining this involves weighing costs of the pesticides versus their benefits. We on the whole commend the Assessment as an indication of the agency taking its duty to weigh the actual benefits seriously.

Specific Comments:

1. EPA's Assessment is very well-documented and reliable, but it is also long past due.

The strong findings in EPA's expert Assessment led to this fundamental conclusion (p. 13):

> *This analysis provides evidence that U.S. soybean growers derive limited to no benefit from neonicotinoid seed treatments in most instances. Published data indicate that most usage of neonicotinoid seed treatments does not protect soybean yield any better than doing no pest control. Given that much of the reported seed treatment usage in the U.S. on soybeans is not associated with a target pest, BEAD concludes that much of the observed use is preventative and may not be currently providing any actual pest management benefits.*

We highlight some other key findings in the Assessment based on EPA's survey of efficacy research and extension experts nationwide (pp. 9-10; emphasis added):

- *When asked how the use of neonicotinoid-treated seeds affected soybean yields, **74%** of respondents (14/19) responded that **yield either stayed the same or decreased**.* (p. 9)
- *When asked if the use of seed treatments affected the amount of foliar pesticide applications on soybeans, **100%** of the respondents indicated that foliar sprays (both aerial and ground) either **stayed the same or actually increased**.*
- *With regard to specific pest efficacy, there **was almost universal agreement** that neonicotinoid seed treatments are **not typically effective against soybean aphids**.*
- *Similarly, neonicotinoid seed treatments are **not effective in controlling bean leaf beetles** as this pest occurs too late in the season*

However, this excerpt from the paper is highly concerning as it suggests EPA may have known for many years that at least 65% of U.S. soybean farmers were using coated seeds with no reason to do so (p. 11).

- *EPA proprietary data show that on average from 2004 to 2012, approximately 65% of soybean growers in the U.S. indicated that they had no pest they were targeting when using neonicotinoid-treated seed.*

We also note that our review of the calendar year of publication of the 36 efficacy studies EPA lists as "References" in its Assessment reveals the average age of those studies to be **over 6 years old**. In other words, the bulk of information indicating lack of efficacy has long been available and should have been acted on years earlier. Given the long delays in acting on the available information to date there can be no justification for further delays in acting on EPA's findings now.

2. The Assessment understates the published science showing lack of efficacy.

The Center for Food Safety's (CFS) report, *Heavy Costs: Weighing the Value of Neonicotinoid Insecticides in Agriculture*, was released in March 2014. The report documents the lack of independent science supporting the efficacy of insecticidal seed coating products and tallies the vast scope of the costs those products impose to the nation.[1] *Heavy Costs* is entirely consistent with EPA's assessment with respect to soybean seeds (although not cited by EPA).

Of the ten journal-published soybean efficacy articles in the CFS report, EPA's Assessment cites nine of them. EPA should also have considered the missing Esker and Conley (2012) article.[2] As described in *Heavy* Costs, the authors explored the economic considerations for seed treatment by looking at the probability that a positive crop yield response will at least cover the cost of treatment in typical Wisconsin soybean fields. They focused on whether they could make robust recommendations about using the treatments. The authors found there were no strong conclusions to be made from their "treated versus control" testing, noting:

> *...the complexity of the results regarding the probability of breaking even with the application of seed treatments suggests that making specific recommendations is difficult.*

EPA also disregarded the section of *Heavy Costs* that quoted from the seminal Goulson (2013) article, "An overview of the environmental risks posed by neonicotinoid insecticides."[3] Goulson reiterated similar results on lack of efficacy, citing many of the same studies in EPA's

---

[1] Stevens S, and P Jenkins. 2014. *Heavy Costs: Weighing the Value of Neonicotinoid Insecticides in Agriculture.* Report by the Center for Food Safety, Washington, DC. Online at: www.centerforfoodsafety.org/reports/2999/heavy-costs-weighing-the-value-of-neonicotinoid-insecticides-in-agriculture .

[2] Esker PD and Conley SP. 2012. Probability of yield response and breaking even for soybean seed treatments. *Crop Science,* 52: 351-359.

[3] Goulson D. 2013. An overview of the environmental risks posed by neonicotinoid insecticides. *Journal of Applied Ecology*, 50: 977-987.

Assessment. Goulson also relied on a published study from Brazil that EPA's Assessment did not take into account, but should have:[4]

> *Bueno et al. (2011) compared managing soya pests in Brazil using either an IPM approach or prophylactic use of insecticides (the latter primarily based on imidacloprid). Crop yields were indistinguishable in the two treatments, but pesticide use and costs were much lower in the IPM treatment, demonstrating that this remains the best alternative in this system.*

EPA also disregarded this assertion in *Heavy Costs,* quoting an Ontario government official:[5]

> *Tracy Baute, an Ontario Ministry of Agriculture and Food entomologist and IPM expert, stated: "Based on my experience, only 10 to 20% of the corn and soybean acres are actually at risk of most of the soil pests on the [neonicotinoid] product labels." In other words, 80 to 90% of the use is unnecessary. Ontario's corn and soybean growing practices are similar to those in the northern portions of the US Midwest corn and soybean regions.*

As EPA is aware, because of heavy impacts on honey bees and the environment, Ontario recently announced its intent to reduce neonicotinoid use by 80% province-wide as of 2017; the decision to do so relied heavily on the lack of efficacy for farmers.[6] Ontario's action provides an important precedent for similar action from EPA based on its similar U.S.-based Assessment.

3. Registrants of the soybean coating products were required to have efficacy information on hand and they violated that requirement.

The primary clothianidin and thiamethoxam coating products for soybean seeds are listed below with their EPA registration number.[7] All of these products have been in use for several years. (Note: there are newer products also, however public information on them is difficult to access; EPA itself of course has that information; the comments in this section apply to all neonicotinoid

---

[4] Bueno AD, Batistela MJ, Bueno RCOD, Franca-Neto JD, Nishikawa MAN, and Liberio, A. 2011. Effects of integrated pest management, biological control and prophylactic use of insecticides on the management and sustainability of soybeans. *Crop Protection*, 30: 937–945.

[5] Baute, T. 2013. *Using Fungicide-Only Treated Seed and Following IPM.* Ontario Ministry of Agriculture and Food. Online at: www.omafra.gov.on.ca/english/crops/field/news/croptalk/2013/ct-0913a1.htm .

[6] Links to Ontario's announcement and detailed Discussion Paper on sharply reducing the use of these insecticides, issued on Nov. 25, are here, issued by the Minister of Agriculture, Food and Rural Affairs and the Minister of the Environment and Climate Change. Press release: *Reducing Pesticide Use and Protecting Pollinator Health - Ontario Sets Goal to Reduce Neonicotinoid Use by 80 Per Cent* http://news.ontario.ca/ene/en/2014/11/reducing-pesticide-use-and-protecting-pollinator-ealth.html?utm_source=ondemand&utm_medium=email&utm_campaign=p ; Discussion paper: *Pollinator Health. A Proposal for Enhancing Pollinator Health and Reducing the Use of Neonicotinoid Pesticides in Ontario;* http://www.omafra.gov.on.ca/english/pollinator/discuss-paper.pdf .

[7] Source: EPA's Pesticide Product Label System; online at: http://iaspub.epa.gov/apex/pesticides/f?p=PPLS:1.

ED_004126_00000496-00004

soybean coating products in use, old or new, including any other compounds in use beyond clothianidin and thiamethoxam.) Per the Assessment, imidacloprid is the other major soybean coating. **The Commenters have not done additional research on all of the imidacloprid products, but the illustrative assertions here regarding thiamethoxam and clothianidin coating products apply equally to the imidacloprid products.**

Thiamethoxam Soybean Seed Coatings (11)
- Cruiser Insecticide, 100-941
- THX/MXM/FDL CZ, 100-1283
- Four-Way VAP, 100-1384
- THX_MXM_FDL_TBZ FS, 100-1426
- CruiserMaxx EZ, 100-1427
- Adage Delux, 100-1449
- Adage Premier, 100-1450
- CruiserMAXX Vibrance, 100-1508
- Avicta Complete Beans, 100-1457
- SYT0113,100-1459
- SYT0511, 100-1460

Clothianidin Soybean Seed Coatings (3)
- Poncho/Votivo, 264-1109
- V-10170 5 FS Insecticide, 59639-151
- Inovate Seed Protectant, 59639-176

As far as these and other registered products, EPA's "efficacy" regulation, under "Product performance data requirements" at 40 CFR § 158.400(e)(1), states (in pertinent part):

> *...each registrant must ensure through testing that his [sic] product is efficacious when used in accordance with label directions and commonly accepted pest control practices.*

As indicated above, a large body of published information showing lack of efficacy of coated soybeans has been available for many years. The registrants of the 14 illustrative coating products above were long on notice of the need to "ensure" efficacy "through testing". Yet, the Assessment as well as independent research, including via the Freedom of Information Act, reveals the registrants of those products submitted no reliable tests for publication or to EPA that showed efficacy. The registrants' violation of the mandate in the efficacy regulation provides additional grounds for suspension of the coating products above, as well as any other registrations, in particular those with imidacloprid, which suffer from the same defect.

4. The newly-developed pesticide industry-submitted "studies" are not reliable and do not meet the requirements of EPA's efficacy regulation.

Again, the requirements of 40 CFR § 158.400(e)(1) are (emphasis added):

> *.....each registrant must ensure through testing that his [sic] product is efficacious....*

There is a slew of recent, unpublished, non-peer-reviewed, industry-funded information claiming efficacy. However, it is contrary to the vast majority of peer-reviewed journal articles and other reliable studies. Further, the industry information does not satisfy the mandate in 40 CFR § 158.400(e)(1) for efficacy to be shown by "testing," i.e., controlled field studies.

Farmer surveys and "focus groups" in which the industry controlled the questions and the respondents were compensated for their answers do not satisfy EPA's "testing" directive. Economic reports that claim to show benefits, yet are not peer-reviewed publications and are built upon dense, vague, self-serving methods and assumption are not adequate to meet the terms of the efficacy regulation either. Further, polished industry PR campaigns and individual "case studies" do not satisfy EPA's "testing" requirement.

In sum, the information that pesticide registrants have pointed at to date alleging economic benefits is non-falsifiable, thus it is unscientific, and it appears designed to find benefits even where they may not exist. EPA should disregard such information.

The so-called "testimonials" that the pesticide registrants have obtained from various soybean farmers are particularly unreliable. It is apparent that many farmers will say they prefer coated seeds as "cheap insurance"– it also appears those same farmers are heavily influenced by advertising and other information beyond crop yields. That stated "option preference" by a subset of soybean farmers does not render the coating products "efficacious" within the meaning of 40 CFR § 158.400(e)(1). To the extent EPA nevertheless considers individual farmer statements, we submit these recent excerpts from the Canadian *Globe and Mail* newspaper article entitled, "Neonic efficacy in spotlight as Ontario plans to curb usage".[8] Addressing soybeans among other crops, the article provides a non-industry funded counterpoint on what truly drives the alleged popularity of this "insurance" (emphasis added):

> *The seed treatments, which became popular in the past decade, have become an* ***insurance policy for farmers*** *trying to protect their yields. In Ontario, they are used on almost all corn and canola and most soybean seeds, in addition to greenhouse vegetables and flowers.*
>
> *For Mr. McGivern, whose family has grown grains and raised cattle near Owen Sound, Ont., for 27 years, relying on neonics is akin to treating a person's high blood pressure without tackling their weight problem.*

[8] Atkins E. 2014. *The* (Toronto) *Globe and Mail.* Dec. 14. Online at: http://www.theglobeandmail.com/report-on-business/neonics-sowing-seeds-of-discontent/article22078266/ .

> *"Rather than changing up the model to alleviate these pressures, they're treating the side-effects of a broken system. There are a lot of farmers out there who get it, but there are a* ***lot of farmers who get all their advice from the multinationals that are selling them all the products****," said Mr. McGivern, who heads a group called Practical Farmers of Ontario, which bills itself as a voice for family farms.*
>
> *"There's no money made in giving people advice on how to do things that don't cost something to do. So now we've gone to a system where we have multinational, petro-agricultural companies saying 'You don't need to have crop rotation. We'll just sell you the technology and the seed that will allow you to grow corn in the same field for five years.'"*
>
> *Will Trudell, owner of De Dell Seeds Inc. in London, Ont., said neonic-treated seeds account for just 10 per cent of his sales, but he is the exception in a seed-selling business that is dominated by such chemical companies and their retail divisions.*
>
> ***"The big players all say the farmer is going to lose yield if they don't use this. That's not true****. It doesn't increase the yield at all, by putting on the neonicotinoid; it only reduces the harmful effects by insect damage," Mr. Trudell said.*
>
> *He pointed to an Ontario government study that found just 10 to 20 per cent of the province's fields require neonic-treated crops to guard against pests.* ***"If there's no insect pressure, there's no yield loss," Mr. Trudell said. "That's a huge part of this story that needs telling."***

The only information that could satisfy the legal requirement in EPA's own regulation is controlled testing reported in peer-reviewed literature or in gray literature with indicia of independence and high reliability. For the registrants to rebut EPA's Assessment, their information would need to outweigh the currently overwhelming weight of published tests showing lack of efficacy. A fair review will show that the registrants have failed to submit testing that rebuts the published studies or rebuts the vast bulk of the other independent and reliable information EPA relied on its expert Assessment.

5. EPA should warn Mid-Atlantic soybean farmers who use coated seeds of yield reduction risks and undertake prompt suspension of those misleading products.

The Assessment commendably recognized the importance of recent Pennsylvania State University soybean yield research even when those results could only be cited in "Unpublished" form (Assessment, p. 10, citing Douglas et al.). Use of coated soybean seeds **reduced** crop yields in a typical Mid-Atlantic soybean agriculture setting by **5 percent** compared to the uncoated control seeds.

That alarming research has since been published.[9] As EPA already is aware of the study, we here highlight some subsequent comments from the authors that shed further light on their findings. According to John Tooker, Associate professor of Entomology:

> *Our research suggests that neonicotinoids can have unintended costs, even within crop production....Slugs are among the most challenging pests faced by Mid-Atlantic no-till growers. Our research reveals that neonicotinoids can indirectly increase slug damage to crops by poisoning insects that eat slugs....*[10]
>
> *.....This lack of a yield benefit from neonicotinoid seed treatments on soybeans has also been found repeatedly by colleagues at Universities across the cornbelt. Layered on top of this lack of a yield benefit is mounting evidence that neonicotinoids from seed treatments can pollute water and decrease populations of native insects and even insect-eating birds.*[11]

The lead author, Margaret Douglas, has stated:

> *Seed applications of neonicotinoids are often viewed as cheap insurance against pest problems, but our results suggest that they can sometimes worsen pest problems and should be used with care.*[12]

No farmers would knowingly purchase "insurance" that actually or foreseeably will cost them 5% of their crop, with associated economic loss. That fact indicates the farmers are being misled. None of the labels on the thiamethoxam or clothianidin coating products, listed above, advises farmers of these real financial loss risks (CFS has reviewed all of the 14 product labels).

At a minimum the agency has a duty to warn farmers in the Mid-Atlantic Region that using these products can have major "perverse" results as discussed above. As EPA demonstrated in the 2011 case of the highly damaging herbicide, "Imprelis," the agency has substantial control under FIFRA over pesticides that cause significant harmful effects that are not indicated on the product

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[9] Douglas MR, Rohr JR., Tooker JF. 2014. Neonicotinoid insecticide travels through a soil food chain, disrupting biological control of non-target pests and decreasing soybean yield. *Journal of Applied Ecology* doi: 10.1111/1365-2664.12372.

[10] LaJeunesse S. 2014. Insecticides foster 'toxic' slugs, reduce crop yields. *Penn State News.* State College, PA. Dec. 4, Online at: http://news.psu.edu/story/336981/2014/12/04/research/insecticides-foster-toxic-slugs-reduce-crop-yields?utm_source=newswire&utm_medium=email&utm_term=337084_HTML&utm_content=12-04-2014-21-04&utm_campaign=Penn%20State%20Today .

[11] Tooker JF. 2014. *The Questionable Benefit of Neonicotinoid Seed Treatments to Soybeans.* Online Extension publication, Penn State College of Agriculture Sciences. Online at: http://extension.psu.edu/plants/crops/news/2014/11/the-questionable-benefit-of-neonicotinoid-seed-treatments-to-soybeans .

[12] LaJeunesse S. 2014, *supra.*

labels.[13] In this case, the agency should again act via a Stop Sale, Use, or Removal Orders to prohibit the products from at least the Mid-Atlantic Region market altogether.

6. The economic costs of these products to the nation sharply exceed their marginal or non-existent benefits.

There is mounting evidence of environmental persistence and direct and indirect harms including to honey bees, other beneficial insects, organic agriculture, water quality, wildlife and ecosystem sustainability. The Assessment does not address or weigh the costs; no other EPA document that we have seen does so either. The CFS *Heavy Costs* report provides the key categories that EPA must consider as plainly foreseeable costs of systemic neonicotinoid use on seeds:[14]

1) honey bee colony impacts and resulting reduced yields of pollinated crops,

2) reduced production of honey and other bee products,

3) financial harm to beekeepers and consumers,

4) loss of ecosystem services, and

5) market damage from contamination events.

Indeed, the *Heavy Costs* report makes the case that the sum of these costs totals well into the **billions** of dollars. The percentage attributable to soybean coatings is not precisely calculable. But again, these products are used on about 23 million acres nationally, per the Assessment. They are second only to coated corn seeds in terms of the land area they impact. There is a high likelihood that their combined negative economic impacts total in the billions of dollars. This far outweighs even the illusory "modelled" benefits to farmers that are claimed by the products' registrants.

Of note also, in July 2014, the U.S. Fish and Wildlife Service announced it will phase out neonicotinoid insecticides, including coated soybeans, in all National Wildlife Refuges across the country by January 2016.[15] This is an indication of the costs of these products in terms of impacts on native wildlife. This includes Endangered Species Act (ESA)-listed threatened and endangered species. It is well-understood by Federal agencies that they are prohibited from contributing to the jeopardy of ESA-listed species. EPA must weigh the contribution of 23 million acres of coated soybeans to water contamination and other direct and indirect effects on

[13] EPA Region III, *In re E.I. du Pont de Nemours & Co.*, Stop Sale, Use, or Removal Order, Docket No. FIFRA-03-2011-0277SS (Aug. 11, 2011).
[14] Stevens and Jenkins. 2014, *supra* at 1.
[15] July 17, 2014, Memorandum "Use of Agricultural Practices in Wildlife Management in the National Wildlife Refuge System," issued by the Chief of the FWS NWR System, James W. Kurth, to all Regional Refuge Chiefs. Online at: http://www.centerforfoodsafety.com/files/agricultural-practices-in-wildlife-management_20849.pdf .

ESA-listed birds, invertebrates and other species in its consideration. Notably, our research has revealed that EPA has never once consulted under the ESA Sec. 7(a)(2) on the effects of these soybean seed products on ESA-listed species.

A vast array of new scientific information released since the *Heavy Costs* report shows mounting environmental and economic costs of neonicotinoids. Most of our organizations submitted detailed recent comment letters to EPA and the White House Pollinator Task Force, which reiterate those costs.[16] It would be too lengthy to reiterate all of this mounting cost information here. We request that EPA consider those prior comments and find that the costs of neonicotinoid soybean seeds vastly exceed their marginal, indeed in most cases, non-existent benefits – and in the case of the Mid-Atlantic Region, their actual harm to yields. This finding should result in their prompt suspension.

7. Prophylactic insecticidal seed coatings conflict with Integrated Pest Management.

It should be clear that Integrated Pest Management (IPM) – which EPA frequently claims it supports as a policy matter – does not include a role for blanket use of prophylactic neonicotinoid-coated seeds as "insurance". This practice violates fundamental tenets of IPM, including the use of action thresholds, monitoring and resistance management. The incompatibility of these seed coatings and IPM is not only based on what many experts, such as Professors Christian Krupke of Purdue University and David Goulson of the University of Sussex, have stated.[17] It also is supported directly by what the multi-stakeholder Corn Dust Research Consortium (CDRC) stated in its January 2014 Report.[18] The same CDRC recommendation about minimizing unnecessary use of coated seeds and adhering to IPM practices also applies to soybean seeds.

Over recent decades, many farmers' adherence to IPM or organic practices has preserved important ecosystem values across the nation by reducing unneeded pesticide use and enabling pollinators and other beneficial species to flourish in those areas. EPA's weighing of the coated seeds technology must take into account their negative impacts on IPM and on neighboring organic operations as well.

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[16] Comment on EPA Assessment of neonicotinoid insecticides, dated Sept. 24, 2014, submitted to Gina McCarthy and forwarded to White House Pollinator Task Force submitted on behalf of 17 NGOs: American Bird Conservancy, Beyond Pesticides, Beyond Toxics, Center for Biological Diversity, Center for Environmental Health, Center for Food Safety, Family Farm Defenders, Food and Water Watch, Friends of the Earth, Maryland Pesticide Network, Midwest Organic Sustainable Education Service, Northwest Center for Alternatives to Pesticides, Organic Consumers Association & Via Organica, Pesticide Action Network North America, Sierra Club, Slow Food USA and Women, Food and Agriculture Network. Online at: http://www.centerforfoodsafety.org/files/comment-epa-ngos-neonicotinoids_56534.pdf.

[17] Stevens and Jenkins. 2014, *supra* at 10-11.

[18] Corn Dust Research Consortium. 2014. *Preliminary Report: Initial Findings for 2013, Provisional Recommendations, Timetable.* Pollinator Partnership. Online at: www.pollinator.org/PDFs/CDRCfinalreport2013.pdf.

8. EPA must not wait to address this issue until Registration Review for clothianidin and thiamethoxam has been completed.

EPA's announcement of the soybean efficacy Assessment stated how the agency appeared to see the regulatory reforms that could result:

> *This analysis is an important part of the science EPA will use to move forward with the assessment of the risks and benefits under registration review for the neonicotinoid pesticides. Registration review, the periodic re-evaluation of pesticides to determine if they continue to meet the safety standard, can result in EPA discontinuing certain uses, placing limits on the pesticide registration, and requiring other label changes.*

It would be irresponsible to delay until completion of the planned Registration Review (now targeted vaguely between 2016-19) to actually take the needed steps as far as the registrations or labels for coated soybean seeds. That would allow as many as five additional planting seasons (2015-19) for damaging and unnecessary insecticidal products to be used. Instead, EPA should take the needed steps now. Imposing registration suspensions or very strong label restrictions would be exceedingly appropriate "actions" to include in the agency's response to President Obama as part of the White House Pollinator Health Task Force process, the results of which are expected by no later than April 2015. As the agency is aware, Sec. 3.1 of the President's Memorandum states (in pertinent part; emphasis added):

> *.... the Environmental Protection Agency shall assess the effects of pesticides, including neonicotinoids, on bee and other pollinator health and* ***take action, as appropriate, to protect pollinators****.*

If the agency were to refuse to take needed action to protect pollinators from coated soybean seeds for several years, it would conflict with the terms and spirit of the President's Memorandum, in addition to being contrary to the mandates of FIFRA as outlined above.

9. EPA should release a similar analysis for corn and other coated seeds.

The findings in the CFS *Heavy Costs* report for corn and other neonicotinoid-coated seeds on lack of efficacy mirror those that EPA made for soybeans. We are aware that noted efficacy experts in the national IPM programs provided information over the past year to EPA on the lack of efficacy for corn that was very similar to the information they provided on soybeans. Yet, EPA has issued no comparable efficacy Assessment for any other neonicotinoid-coated seeds.

Corn in particular must be addressed as almost all of it is coated with clothianidin or thiamethoxam, with an area extent nationally likely at least four times the area planted with coated soybean seeds, close to 100 million acres. Corn seed is by far the largest single use of these damaging insecticides. It would be strongly in the public interest for EPA to engage in a comparable public comment process for that crop as it is engaged in here for soybeans. We note that in Ontario the government's decision (referred to above) to seek to restrict coated seeds applies to both crops equally and is driven not only by the high costs to beekeepers, but also by the lack of benefits including for corn.

10. EPA's liberal policies and regulatory missteps have allowed the excessive costs to occur.

The current high costs in relation to the lack of benefits for coated soybean seeds did not "just happen". This unacceptable situation is a direct result of EPA's excessively liberal policies under FIFRA and related regulatory missteps. This Comment is not the forum to delineate all of these problems, but we will sketch them here. The agency itself is fully aware of these facts; many of our groups have commented on them at length in prior letters, comments and Petitions too numerous to list.

EPA's remarkable four-fold list of regulatory laxness and missteps that allowed this situation to unfold is as follows. Our investigation has shown that for all of the 14 coating products listed above, EPA did not:

1) require the products' registrants to possess or submit "testing" information showing efficacy, per 40 CFR § 158.400(e)(1); or

2) comply with the ESA Sec. 7(a)(2) as far as readily foreseeable effects on threatened and endangered species.

While EPA did:

3) improperly apply the "treated article exemption" in 40 CFR § 152.25(a) on *Exemptions for pesticides of a character not requiring FIFRA regulation*, to exempt the insecticidal soybean seeds themselves from registration or mandatory FIFRA labeling, despite the harmful impacts of the sloughed or blown-off coatings and contaminated dust occurring far beyond the seeds; and

4) allowed Conditional Registrations, under 7 U.S.C. § 136a(c)(5) and § 136a(c)(7)(C), for the majority of the coating products without compelling satisfaction of key

conditions, such as completion of the ten-year-delayed adequate Pollinator Field Test condition.[19]

In short, the agency has repeatedly taken a tragically multiplied "hands off" approach in authorizing these environmentally dangerous pesticides without adequate economic benefits. This has neither served the public interest nor the requirements of FIFRA or the ESA.

In conclusion, EPA finally has set the stage for corrective action by solidly demonstrating that the claimed benefits of the neonicotinoid soybean seed coating products are illusory. Overall, it is clear their use must be suspended.

For further information and to respond to this Comment, please contact: Peter T. Jenkins, Attorney/consultant, CFS, at 202.547.9359 or pjenkins@centerforfoodsafety.org .

Sincerely,

/s/ Peter T. Jenkins

On behalf of:

American Bird Conservancy
Beyond Pesticides
Beyond Toxics
California State Grange
Center for Biological Diversity
Center for Food Safety
Ecological Farming Association
Endangered Species Coalition
Farm and Ranch Freedom Alliance
Food and Water Watch,
Friends of the Earth
Institute for Agriculture and Trade Policy
National Family Farm Coalition
Northwest Center for Alternatives to Pesticides
Pesticide Action Network
Toxic Free North Carolina

CC: White House Pollinator Task Force c/o Michael Stebbins, Assistant Director, Biotechnology, Office of Science and Technology Policy

[19] Per EPA's Pesticide Product Label System, cited *supra,* only 4 of the 14 clothianidin and thiamethoxam soybean seed coating products at issue here are "unconditional" registrations: Poncho/Votivo, Inovate Seed Protectant, THX_MXM_FDL_TBZ FS and CruiserMaxx EZ. The other 10 are "conditional".

CENTER FOR
FOOD SAFETY

Jan. 23, 2015

OPP Docket
Environmental Protection Agency Docket Center
Washington, DC
Filed online at: *www.regulations.gov*

Re: Benefits of Neonicotinoid Seed Treatments to Soybean Production; Docket No. EPA–HQ–OPP–2014–0737

Dear Sir/Madam,

Center for Food Safety (CFS) is pleased to submit this comment to the above-referenced docket on the assessment dated Oct. 15, 2014, by Myers and Hill, entitled: *Benefits of Neonicotinoid Seed Treatments to Soybean Production* (hereinafter, the "Assessment"). This is supplemental to the Dec. 22, 2014, comment on this Assessment that CFS endorsed together with 15 other public interest groups. That comment is re-attached and incorporated herein by reference.[1]

Our focus here is on an unpublished insecticide-industry "Meta-Analysis Approach" report issued by a consultant group AgInfomatics, which claims to assess a broad number of studies on yield effects of the neonicotinoid insecticides.[2]

- First we note the lack of any peer-review or other independent support for the validity of the meta-analysis approach in that report. The purpose of peer-review prior to publication

[1] We have reviewed the docket and not seen our prior multi-group comment posted; please ensure it is considered. Docket Tracking Number: 1jy-8g77-99bd
[2] On Growing Matters website, at http://growingmatters.org/studies/yield/study/ ; also referenced in comment in docket by AgInfomatics LLC and relied on in numerous comments from soybean farmers and pesticide industry-connected stakeholders.

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is to provide disinterested assurance of the general validity of the methods the investigators used. Due to lack of any peer review, the AgInfomatics analysis should be discounted.

- Second, AgInfomatics acknowledged a very serious bias in their "meta" approach. At pp. 15, AgInfomatics admits the reports in its database likely focused on (soybean) test plots with known or artificial high pest pressures, rather than more typical plots. Plainly, the non-peer reviewed, registrant-funded, studies more likely aimed at demonstrating efficacy where the target pests occurred in high densities. Peer-reviewed studies at least would have had a greater likelihood of that bias being corrected by including comparisons with medium and low pest pressure plots. At p. 15, AgInfomatics admits it did not control its averaging exercise for pest pressure due to the large amount of data that would need to be considered. That is a fundamental defect in their simplified averaging approach. Unfortunately, p. 4, Table 1, of their paper shows that for soybeans the vast majority of reported studies - **250 of 314 (80%)** - were "Registrant-Funded" studies as opposed to only **64 (20%)** being "Publications". **Thus, appropriate discounting of the claimed average yield benefit is needed to account for this likely overall high pest pressure bias. Additional discounting is needed to account for the very low proportion of the papers AgInfomatics used in its averaging approach that were independent of the pesticide industry or were peer-reviewed publications.**

- Third, we note that as far as soybean efficacy studies, the AgInfomatics *Appendix of Data References* neglected to consider at least four peer-reviewed, journal-published articles referenced in EPA's Assessment that found marginal, zero or even negative yield effects from using coated soybean seeds: McCornack and Ragsdale (2006); Ohnesorg et al. (2009); Tinsley et al. (2012); and Douglas et al. (2014) (full citations in the Appendix below). Summaries of the first three studies in the Appendix are taken from the CFS report *Heavy Costs: Weighing the Value of Neonicotinoid Insecticides in Agriculture*.[3] The authors' summary of the Douglas et al. paper from Pennsylvania State University also is included; it was published after *Heavy Costs* and the AgInfomatics meta-data report were issued (but it was cited in manuscript form by EPA in its Assessment). **It is plain that if the AgInfomatics calculations had included these four published studies then their already very low claimed average yield benefit would have been even lower or non-existent.** Also, AgInfomatics excluded a published 2011 soybean study from Brazil that also showed poor results from the technology.[4] Again, these peer-

[3] 2014 report by the Center for Food Safety, Washington, DC. At: www.centerforfoodsafety.org/reports/2999/heavy-costs-weighing-the-value-of-neonicotinoid-insecticides-in-agriculture ,

[4] Bueno AD, Batistela MJ, Bueno RCOD, Franca-Neto JD, Nishikawa MAN, and Liberio, A. 2011. Effects of integrated pest management, biological control and prophylactic use of insecticides on the management and sustainability of soybeans. *Crop Protection*, 30: 937–945.

reviewed, controlled test results need to be given more weight by EPA than non-peer reviewed papers of questionable rigor and objectivity.

- Fourth, the Douglas et al. paper's showing of **5% yield drag due to decimation of beneficial predatory insects** needs to be highlighted by EPA in its decision-making. Foreseeable harm to yields and to "beneficials" cannot be "averaged out" in the AgInfomatics meta-analysis as far as EPA's regulatory responsibility is concerned. The agency has a duty to warn users of foreseeable harms from pesticide use and, as indicated in our prior 16-NGO comment, **EPA should suspend this altogether as a defective pesticide product with utterly inadequate label warnings, at least across the Mid-Atlantic Region.**

- Fifth, even accepting for the sake of argument the validity of the AgInfomatics averaging approach, their conclusions do not favor continuation of the registrations for the soybean coating products. The suggested overall yield benefits across the nation from this industry-funded report, pp. 10-13, Tables 2 and 3 and Fig. 2, are extremely low - **only 2.8% compared to no seed treatment and 0.2% compared to use of non-neonicotinoid insecticide**. These are insignificant claims compared to the heavy national monetary and other costs these products impose, as outlined in our prior 16 NGO comment, i.e., environmental persistence and direct and indirect harms including to honey bees and beekeepers, reduced pollinated crop yields for many types of farmers, reduced honey crop, reduced bee products, in addition to harms to other pollinators, other beneficial insects, organic agriculture generally, water quality and wildlife, as well as jeopardy to Federally-listed threatened and endangered species and to ecosystem sustainability.[5] Shockingly, Table 3 indicates that the **205 "registrant-funded" studies comparing seed treatments to other non-neonicotinoid insecticide use found 0.0% (zero) average yield benefit, indicating the registrants have long known the coating "benefits" are illusory.** Pages 28-29, Fig.s 1 through 6, present vivid documentation that industry was aware of well over 100 research plots showing yield reductions in a high variety of contexts across the nation. Predictable harms to yields are thoroughly documented for several States. As with the Douglas et al. results, **EPA must take action to warn and protect farmers from these persistent and harmful yield drag results.**

- Sixth, EPA should note that, at p. 15, AgInfomatics indicates the findings from it dubious "meta-data) approach are the foundation of various subsequent economic benefit reports it points to there (e.g., "Mitchell and Dong 2014" and "Hurley and Mitchell 2014"). In view of the numerous inadequacies in their averaging, discussed above, the subsequent reports are correspondingly flawed.

5

- Seventh, we have reviewed other comments in the docket to date and found none from the registrants that correct the deficiencies cited above or otherwise reliably rebut EPA's professional Assessment. The comment in the docket by Bailey et al., dated Dec. 22, on behalf of 18 field crop entomologists focused in the Northern United States strongly affirms EPA's Assessment's basic conclusions on lack of efficacy. More than 80 percent of U.S. soybean acreage is concentrated in the upper Midwest.[6] This is a critical fact because there are several comments from Extension professionals in the docket claiming efficacy of these coatings. However, those comments are heavily focused on the Deep South where only a minor soybean crop is grown. While there are many "pro-neonic" comments from soybean farmers there also are large numbers of "anti-neonic" comments from beekeepers and other important stakeholders. The farmer comments should be discounted by the substantial incentivizing by industry. According to a recent agriculture industry media report: *"Seed companies are pushing treated seed," one farmer pointed out. "As a selling point, they guarantee full replant if you pick treated soybean seed."*[7]

In conclusion, the AgInfomatics "Meta-data Approach" and other information in the docket to date do not rebut EPA's fundamental findings of lack of efficacy. Actually, the AgInfomatics report, when discounted for its various biases and omissions, serves to reinforce EPA's Assessment on soybean yields. The national costs of these soybean coating products far exceed their illusory benefits and they should be suspended.

For further information and to respond to this comment, please contact: Peter T. Jenkins, Attorney/consultant, CFS, at 202.547.9359 or pjenkins@centerforfoodsafety.org .

Sincerely,

/s/ Peter T. Jenkins

Attachment

CC: White House Pollinator Task Force c/o Michael Stebbins, Assistant Director, Biotechnology, Office of Science and Technology Policy

APPENDIX

[6] See: map; NASS Soybeans: Planted Acreage by County, http://www.nass.usda.gov/Charts and Maps/Crops County/sb-pl.asp .

[7] Unglesbee, E. 2015. "Corn, Soybean Growers Advised to Reel in Insect Control Costs." *AgFax.Com*, Jan. 16, online at: http://agfax.com/2015/01/16/corn-soybean-growers-advised-reel-insect-control-costs-dtn/#sthash.M1hHEnsO.dpuf

Summaries of journal-published studies on soybean seed coating efficacy that are not cited in the AgInfomatics "Meta-Analysis Approach":

McCornack, BP and DW Ragsdale. 2006. Efficacy of thiamethoxam to suppress soybean aphid populations in Minnesota soybean. *Crop Management,* 5(1).

The authors trialed thiamethoxam seed treatment to manage soybean aphid populations in Minnesota. Their results showed that thiamethoxam significantly reduced aphid pressure and reproduction but was only effective at causing aphid mortality and reducing reproduction during early vegetative growth stages. Late season aphid infestations cannot be controlled with seed treatment, and cannot be predicted at planting, so could require additional foliar applications, negating any advantage from using treated seed. Thiamethoxam did not significantly increase yield in years with low aphid density, but did increase yield in one year with high aphid pressure as compared to the untreated control (but was not significantly different from foliar spray plots). "In terms of yield, there was no advantage using a seed treatment over a foliar applied insecticide in any location-year." The authors concluded "at planting application of thiamethoxam for soybean aphid control provides little consistent benefit to the grower."

Ohnesorg, WJ, KD Johnson, and ME O'Neal. 2009. Impact of reduced-risk insecticides on soybean aphid and associated natural enemies. *Journal of Economic Entomology,* 102(5): 1816- 1826.

The researchers utilized imidacloprid and thiamethoxam seed treatments to control soybean aphids in fields in Iowa. They compared seed treatments to foliar insecticides and an untreated control. The plots with foliar insecticides had lower soybean aphid populations and higher yields than those with seed-applied insecticides. During the first year of the experiment, some of the seed treatments provided significant yield benefits compared to the untreated control. In both years, the untreated control and seed treatment plots had the greatest exposure to aphid pressure, and in the second year, with moderate aphid pressure, there was no yield advantage from treating fields for aphids. The neonicotinoid seed treatments "provided limited, inconsistent yield protection to soybean that was occasionally not significantly different from the untreated control."

Tinsley, NA, KL Steffey, RE Estes, JR Heeren, ME Gray, and BW Diers. 2012. Field-level effects of preventative management tactics on soybean aphids (*Aphis glycines* Matsumara) and their predators. *Journal of Applied Entomology,* 136: 361-371.

The researchers investigated the control of soybean aphids provided by aphid-resistant soybean lines and by thiamethoxam seed treatment. Soybean aphids reached economically significant levels in both years. Resistant plants experienced fewer cumulative aphid days, but yields were not significantly different. Thiamethoxam also reduced cumulative aphid days in one year of the study, but not the second year, and did not provide a yield benefit. "Evidence for the ability of thiamethoxam to reduce densities of soybean aphids in this experiment was inconclusive." Seed treatments are less effective against late-season pests—thiamethoxam's utility is limited and dependent on the timing of the infestation because the bioactivity of the compound declines throughout the season. This study "reinforces the economic utility of scouting for soybean aphids and only applying a foliar insecticide when densities reach economically threatening levels."

Douglas MR, Rohr JR., Tooker JF. 2014. Neonicotinoid insecticide travels through a soil food chain, disrupting biological control of non-target pests and decreasing soybean yield. *Journal of Applied Ecology* doi: 10.1111/1365-2664.12372

Summary (by authors)

1. Neonicotinoids are the most widely used insecticides world-wide, but their fate in the environment remains unclear, as does their potential to influence non-target species and the roles they play in agroecosystems.
2. We investigated in laboratory and field studies the influence of the neonicotinoid thiamethoxam, applied as a coating to soya bean seeds, on interactions among soya beans, nontarget molluscan herbivores and their insect predators.
3. In the laboratory, the pest slug *Deroceras reticulatum* was unaffected by thiamethoxam, but transmitted the toxin to predaceous beetles (*Chlaenius tricolor*), impairing or killing >60%.
4. In the field, thiamethoxam-based seed treatments depressed activity–density of arthropod predators, thereby relaxing predation of slugs and reducing soya bean densities by 19% and yield by 5%.
5. Neonicotinoid residue analyses revealed that insecticide concentrations declined through the food chain, but levels in field-collected slugs (up to 500 ng g _1) were still high enough to harm insect predators.
6. Synthesis and applications. Our findings reveal a previously unconsidered ecological pathway through which neonicotinoid use can unintentionally reduce biological

control and crop yield. Trophic transfer of neonicotinoids challenges the notion that seed-applied toxins precisely target herbivorous pests and highlights the need to consider predatory arthropods and soil communities in neonicotinoid risk assessment and stewardship.

HEAVY COSTS

WEIGHING THE VALUE OF NEONICOTINOID INSECTICIDES IN AGRICULTURE

CENTER FOR
FOOD SAFETY

MARCH 2014

ED_004126_00000498-00001

ABOUT CENTER FOR FOOD SAFETY

CENTER FOR FOOD SAFETY (CFS) is a non-profit public interest and environmental advocacy membership organization established in 1997 for the purpose of challenging harmful food production technologies and promoting sustainable agriculture. CFS combines multiple tools and strategies in pursuing its goals, including litigation and legal petitions for rulemaking, legal support for various sustainable agriculture and food safety constituencies, as well as public education, grassroots organizing, and media outreach.

ACKNOWLEDGEMENTS

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EXECUTIVE SUMMARY

This report tackles the question: **Are neonicotinoid insecticidal seed treatment products beneficial or not?** Center for Food Safety reviewed and summarized 19 articles from scientific journals that studied the relationship between neonicotinoid treatments and actual yields of major US crops: canola, corn, dry beans, soybeans, and wheat. In sum, we found that numerous studies show neonicotinoid seed treatments do not provide significant yield benefits in many contexts. European reports of crop yields being maintained even after regional neonicotinoid bans corroborate this finding. Opinions from several independent experts reinforce that neonicotinoids are massively overused in the US, without a corresponding yield benefit, across numerous agricultural contexts. The bottom line is that toxic insecticides are being unnecessarily applied in most cases.

Neonicotinoids have acute and sublethal effects on honey bees and other pollinators and are considered a major factor in colony collapse. It appears that in approving these insecticide products, the Environmental Protection Agency (EPA) has overvalued the "insurance" neonicotinoids offer against the mere risk of pest pressures, which are often not realized. This has led to heavy costs to the agricultural community and the nation as a whole. "Pre-sterilizing" fields has, in effect, rendered integrated pest management (IPM), in which pesticides are only used if economic pest damage thresholds are exceeded, obsolete for many major field crops.

RECOMMENDATIONS

In order to fully evaluate future insecticide registration applications and comply with EPA's mandate to account for both benefits and costs, the agency should:

- Fully weigh both quantifiable and unquantifiable values in assessments of proposed systemic insecticide products, including at a minimum these foreseeable cost categories:
    1) honey bee colony impacts and resulting reduced yields of pollinated crops,
    2) reduced production of honey and other bee products,
    3) financial harm to beekeepers and consumers,
    4) loss of ecosystem services, and
    5) market damage from contamination events.
- Require verification by independent scientists and economists (preferably published in peer-reviewed journals) for claims of efficacy, crop yields, and economic benefits associated with all products.
- Reject applications to register any prophylactic insecticides that undermine basic IPM principles, may harm organic farm production, or are not cost-effective, either for the farmer or the nation as a whole.
- For all insecticidal seed treatment products, repeal the agency's waiver for "product performance data" in the EPA Product Performance regulation at 50 CFR § 158.400(e)(1) because of their prophylactic overuse, lack of efficacy, unique persistence, and high overall costs. Related to that, EPA also should promptly enforce the mandate in its regulation that: "each registrant must ensure through testing that his [sic] product is efficacious when used in accordance with label directions and commonly accepted pest control practices."

In light of the findings of this report, EPA should suspend all existing registrations of neonicotinoid seed treatment products whose costs and benefits have not been adequately weighed until this accounting is completed.

EVALUATING THE RISKS OF NEONICOTINOIDS

Neonicotinoids are a class of insecticides that damage the central nervous system of insects, causing tremors, paralysis, and death at very low doses. The primary neonicotinoids registered for use in the US are six relatively new (within the last 20 years) active ingredients: acetamiprid, clothianidin, dinotefuran, imidacloprid, thiacloprid, and thiamethoxam. All are "systemic," meaning they are absorbed into treated plants and distributed in their vascular systems with water that moves up through the plant. Treating a plant or just coating a seed with neonicotinoids can render parts of the plant—including the roots, leaves, stem, flowers, nectar, pollen, and guttation fluid—toxic to insects. The toxicity of the plant varies over time depending on the part of the plant, the amount of neonicotinoid applied, and other factors. Neonicotinoids are persistent in soil and easily transported via air, dust and water to habitats in or near crop fields.[1] There, they can kill or weaken beneficial invertebrates, as well as birds and other wildlife, through direct and indirect effects.[2] Sublethal doses can result in honey bee (*Apis mellifera*) colony damage through chronic effects, including compromising the behavior, health, and immunity of colonies, thus causing them to collapse due to pathogens and parasites.[3]

The risks of using neonicotinoid pesticides are widely reported in the literature—evidence of their harms to pollinators and other beneficial insects is abundant—but what about the *benefits* of using these compounds? Seed of major crops in the US is widely treated with neonicotinoids, ostensibly to protect emerging seedlings from pests and thus improve yields. Almost all of the corn seed and approximately half of the soybeans in the US are treated with neonicotinoids.[4] More than 90% of the canola seeded in North America is treated.[5] This prophylactic pre-planting application occurs regardless of the pest pressure expected in the field, as typically there is no monitoring or sampling of crop fields for pest presence prior to application. Neonicotinoid treated seeds are commonly the only option for farmers purchasing seed. Despite marketing of these products that promotes their benefits to farmers, many peer-reviewed studies show little or no yield benefit associated with their use on crops, especially where there is low or moderate pest pressure. The studies reviewed in this report suggest that farmers are frequently investing in crop protection that is not providing them with benefits. In addition to the short-term economic costs, this presents long-term risks to sustainability for American farmers and the rural environment.

Despite their extensive use, there is a relatively small body of independent literature examining neonicotinoid use on crops. In 2011, scientists noted "there have been few peer-reviewed studies on seed-applied insecticide/fungicides probably because of the recent commercialization of these products."[6] This report surveys peer-reviewed literature that evaluates the efficacy of neonicotinoid seed treatments and finds that they are not providing a benefit to farmers for pest management across numerous agricultural contexts. The studies reviewed address major commodity crops grown in the US and Canada, but reports from other countries also show that neonicotinoids may not be providing a benefit. These studies were conducted in several regions, representing a range of climatic conditions and pest pressure levels encountered by American farmers.

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WEIGHING COSTS AND BENEFITS

The Environmental Protection Agency (EPA) has the authority to approve or deny new pesticides under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA).[7] FIFRA directs EPA to evaluate whether the use of pesticides (including neonicotinoids) proposed for registration presents "any unreasonable risk to man or the environment, taking into account the economic, social, and environmental *costs* and *benefits* [emphasis added]."[8] If EPA's weighing of the foreseeable costs of a proposed product exceeds its foreseeable benefits, then FIFRA compels the agency to deny registration.

Although not all records are public, to date, no indication exists that EPA has *ever* formally denied a full registration for any proposed neonicotinoid product because its foreseeable costs exceeded its benefits.[9] Since the late 1990s, the agency has approved neonicotinoid products whose applications are estimated to now exceed 150 million acres and very likely more than 200 million acres in annual applications nationwide.[10] It is estimated that more than 500 different neonicotinoid products exist, approved for more than 150 crop, landscape, ornamental, and other uses such as structures, poultry litter, pets, and termite control. In short, it is apparent that EPA routinely judges the foreseeable costs of neonicotinoids to be outweighed by the benefits they will provide to farmers and other users. Indeed, EPA's own Product Performance regulation has waived the obligation for pesticide manufacturers to demonstrate that new pesticide products are efficacious before they are registered, with limited exceptions.[11] This indicates the agency's weighing of the products' costs versus benefits is not rigorous.

Although there is no doubt that neonicotinoids are highly toxic to insects, this does not mean they are routinely effective in pest management. This report aims to answer the question: **Are neonicotinoid insecticidal seed treatment products beneficial or not?** Center for Food Safety reviewed and summarized 19 peer-reviewed articles from scientific journals that studied the relationship between neonicotinoid treatments and actual yields of major US crops: canola, corn, dry beans, soybeans, and wheat. In sum, we found that numerous studies have documented that neonicotinoid insecticides do not provide significant crop yield benefits in many contexts. The risks and costs of using neonicotinoid seed treatments outweigh their potential benefits.

The scope of this inquiry is limited to *agricultural* benefits, because such benefits have a ready measure: relative units of crop yield. While yield is not the only possible benefit, it is certainly the one that garners the most attention from crop producers and impacts their planting decisions. It should be noted that neonicotinoids are also used in scores of landscaping, ornamental, and other non-agricultural contexts where quantification of benefits is typically infeasible because it includes aesthetics and other largely subjective measures. Deploying powerful insecticides—particularly persistent systemic compounds—in gardening and ornamental uses has been heavily criticized because of the potential for harm to beneficial insects and other positive environmental attributes.[12] Without yield as a measure, EPA's weighing of benefits, or the lack thereof, necessarily is more qualitative than quantitative for non-agricultural uses, but accurate accounting remains vitally important.

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ASSESSING THE LITERATURE

This literature review compiles independent peer-reviewed studies on the use of neonicotinoid seed treatments, and concludes that in many cases, the compounds are not providing a yield or economic benefit to farmers. The studies represent a wide range of locales and weather patterns, demonstrating that the results are robust across various agricultural contexts and growing conditions. In cases where there was moderate or low pest pressure, the reviewed studies found that neonicotinoids were even less likely to provide a yield benefit. The findings indicate there is often no economic justification for using neonicotinoids as a prophylactic control measure because the cost of treatment tends to exceed that of other control options that can be used when pests reach economic levels.

The following are the major findings from this literature review:

- **Neonicotinoids either did not provide a yield benefit (8 studies[13]), or provided an inconsistent yield benefit (11 studies[14]).**
- **Using neonicotinoids frequently does not provide an economic benefit to farmers compared to alternative control methods or not treating fields when pest pressure is minimal.**
- **Efficacy of neonicotinoids varies and is difficult to predict, especially for pests that emerge around the same time in the season that the bioactivity of neonicotinoids declines.**

Several authors concluded that using neonicotinoids at best provided sporadic pest control and, for some pest species, were typically ineffective. Although neonicotinoids occasionally provided benefits in terms of reduced pest damage or other growing season parameters, in many cases these observed benefits did not translate into increased yield at the end of the season. For pests like soybean aphid, which typically emerge at an economic level after the neonicotinoids are no longer active in the plants, scientists recommend that "management should be based on scouting and applying an insecticide only when populations exceed the economic threshold."[15] They also note that the prophylactic nature of neonicotinoid seed treatments means farmers are paying to treat a threat that may or may not exist, as "producers incur a control cost prior to the manifestation of pest pressure, and this cost is not recouped with higher yield if economically damaging populations of herbivores do not occur prior to loss of bioactivity."[16] It is evident that prophylactically treating crops for pests is not benefitting farmers in terms of yield or economics when pest pressure is uncertain. Given the demonstrated harmful effects of neonicotinoids on honey bees and other beneficial insects, it is clear that they are widely overused in American agriculture to the detriment of pollination services, farmers, and the environment.

METHODOLOGY

Studies included in this review were identified by conducting online scientific literature searches for independent research that evaluated yield of major North American crops in response to neonicotinoid seed treatments.[17] This report does not provide all studies that have assessed yield and we recognize that several other studies have found benefits. However, these studies are often neither published in a peer-reviewed journal nor independent of pesticide manufacturer funding. We identified four studies that showed yield benefits from neonicotinoids in independent literature,[18] and also located industry-sponsored papers and presentations that mention yield benefits but do not include full data or methodology.[19] Benefits of neonicotinoid seed treatments have been promoted by their manufacturers, and the EPA does not require independent testing to ensure their efficacy before registering the insecticides. Given the widespread adoption of neonicotinoid seed treatments, it is concerning that there is such a small body of independent literature assessing the efficacy of the products, especially considering that many of the published studies cast doubt on their benefits.

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CORN

Cox et al. (2007) evaluated the use of clothianidin seed treatment on corn in the northeastern United States, where there is occasional early-season pest pressure. The experiment included two levels of clothianidin treatment and a control without insecticides (all seed was treated with fungicides), and found that neither crop development nor grain yield were affected by clothianidin seed treatment. Weather conditions varied in the two years of the study, representing the growing conditions faced in the region. Clothianidin's use in the absence of strong pest pressure did not increase corn yields, and thus was not beneficial to farmers. The authors concluded that "we do not recommend clothianidin seed treatment as inexpensive insurance against early-season soil insect damage when corn follows soybean in the northeastern United States."

Jordan et al. (2012) tested a method of fall sampling to predict spring white grub infestations in Virginia corn fields, as well as the use of clothianidin seed treatment. The fall sampling method was able to predict the level of pest population in the spring, and thus the amount of insect damage that could be expected, which could help farmers make an informed decision about using crop protection products. Clothianidin was applied at two rates to seeds in test plots, along with untreated control seeds. Seed treatment did increase corn stand (quantity of viable plants) in two of the three years. Despite this improved stand, there was only a yield benefit in one of the three years (at the higher application rate), when the below-threshold fields were removed from the analysis. The lower application rate for clothianidin was not different from the control in this year, despite the fact that the low rate is labeled for control of white grubs. There was no yield benefit in the second and third years of the experiment (even when the below-threshold fields were excluded). When the nine fields that had below-threshold pest populations were evaluated, there was no yield difference between treated and untreated seed. These results suggest that clothianidin treatment does not improve yields in the absence of pest pressure, and is not consistently effective with pest pressure.

Petzold-Maxwell et al. (2013) investigated the use of *Bacillus thuringiensis* (Bt) corn and clothianidin seed treatment alone and in combination to control rootworm populations at sites in the midwestern United States (Iowa, Nebraska, and Illinois). There was no significant difference between the control seeds (which were treated with a low rate of thiamethoxam to manage other corn pests) and the clothianidin treatment for the survival of western corn rootworm. Although clothianidin did not significantly reduce adult survival for western corn rootworm, it did affect northern corn rootworm. Root injury levels did not differ amongst Bt varieties, but were lower in non-Bt plots treated with clothianidin versus the control. Despite this reduction in root injury, there was no yield benefit from using clothianidin in either Bt or non-Bt crops. The authors note that "the additional cost of an insecticide may not have offered farmers any economic benefits."

Wilde et al. (2007) evaluated the effects of clothianidin and thiamethoxam seed treatment on corn fields in several Kansas locations. In the absence of noticeable insect pressure, no consistent effect on yield was identified at either high or low application rates, with no significant yield difference across all plots. In those locations where there were differences, control plots occasionally had higher yields than the treated plots, suggesting that the effects of the neonicotinoids are inconsistent at best. There was no consistent effect of treatment at any application rate on grain moisture, days to silk, plant population, or yield. Experiments were also conducted in infested fields for various pests, with variable results. Some plots had increased yields from treatment, and others reduced plant damage but did not see a yield benefit. Greenhouse tests to measure emergence and growth parameters found no significant effect of

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treatment. While the experiments showed that clothianidin and thiamethoxam are effective against some corn pests, they failed to demonstrate a consistent yield benefit during field trials in the absence of pest pressure. The authors concluded that their tests "did not detect significant differences in plant growth of corn that resulted in consistent increases in yield."

SOYBEANS

Cox et al. (2008) evaluated the use of thiamethoxam, imidacloprid, and fungicide seed treatments to manage soybean pests in fields in New York. Seed treatments did not affect plant density, pod density, and seed yield; and had inconsistent effects on seeds per pod and seed mass. The thiamethoxam/fludioxnil treatment produced the most seeds per pod, but the authors did not attribute this result to the effects of the compounds because they are no longer active in the plant by the time soybean reaches late reproductive stages and seed development begins. The results showed a limited effect of neonicotinoids on soybeans, thus indicating that insecticide/fungicide seed treatment is not required for soybean production in the northeastern US.

Cox and Cherney (2011) treated soybeans with clothianidin or imidacloprid and fungicides in plots following corn in New York to explore the effects of seed treatment and planting rate. Interactions between sites and seed treatment for emergence showed that the results are highly variable and site-dependent, with no clear trend of benefits. Seed treatment had inconsistent effects, increasing plant densities at some sites (up to 22%), but not at others. In terms of yield, the plots showed less than 4%, or no, increases with seed treatment. In the economic analysis, the authors suggest "there appears to be no significant advantage in partial return when using seed-applied insecticide/fungicides vs. untreated seed after adjusting for the respective optimum seeding rates." The lower seed cost from reducing planting rates was offset by the cost of treating the seed, so the switch to lower rates and treated seed was not financially beneficial. Soybean seed cost averaged $2.29/kg in 2009-2010, and the average cost of seed treatment was $0.485/kg. The authors concluded that "growers should not expect a big or consistent response to seed-applied insecticide/fungicides under typical growing conditions in the Northeast United States."

Esker and Conley (2012) explored the economic considerations for seed treatment by looking at the probability that the yield response will cover the cost of treatment. They evaluated one fungicide-only treatment and a fungicide with thiamethoxam against an untreated control for soybeans grown in Wisconsin. The primary insecticidal targets in Wisconsin are aphids, bean leaf beetle, and seed corn maggot. The more expensive thiamethoxam treatment provided a 50% or greater probability of breaking even in 22-56% of the plots analyzed. The responses were very dependent on the cultivar, and it is difficult to predict how cultivars will respond because new ones are introduced so rapidly. The authors found that there were no strong conclusions to be made from their results, noting "the complexity of the results regarding the probability of breaking even with the application of seed treatments suggests that making specific recommendations is difficult."

Johnson et al. (2009) evaluated thiamethoxam seed treatment, a prescribed insecticide/fungicide foliar spray (regardless of pest pressure), and an integrated pest management (IPM) strategy for control of soybean aphid in the midwest. IPM relies on scouting fields for insect populations and only applying foliar sprays when the economic damage threshold is reached. All three treatments protected yield and reduced aphid pressure compared to the

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control, but there was no significant difference in yield between the three treatments. The authors assessed the cost effectiveness of each treatment and found that the IPM strategy had the highest probability of being cost effective. Neonicotinoid efficacy is typically diminished by the time aphid densities increase (they lose effectiveness 35-42 days after planting). Given that the occurrence of soybean aphid outbreaks is highly variable, IPM strategies are the best choice because they avoid treating fields that are not susceptible to economic damages from pest pressure. "Although there was little difference in yield among the three insecticide treatments, there was a large difference among the probability of recouping treatment costs," and neonicotinoid treatment had the lowest probability of recouping its cost. "The IPM approach was clearly the most profitable in our break-even analysis, which fits with findings across [a] broad range of US crops where IPM practices have been adopted."

McCornack and Ragsdale (2006) trialed thiamethoxam seed treatment to manage soybean aphid populations in Minnesota. Their results showed that thiamethoxam significantly reduced aphid pressure and reproduction but was only effective at causing aphid mortality and reducing reproduction during early vegetative growth stages. Late season aphid infestations cannot be controlled with seed treatment, and cannot be predicted at planting, so could require additional foliar applications, negating any advantage from using treated seed. Thiamethoxam did not significantly increase yield in years with low aphid density, but did increase yield in one year with high aphid pressure as compared to the untreated control (but was not significantly different from foliar spray plots). "In terms of yield, there was no advantage using a seed treatment over a foliar applied insecticide in any location-year." The authors concluded "at-planting application of thiamethoxam for soybean aphid control provides little consistent benefit to the grower."

Magalhaes et al. (2009) investigated the efficacy of imidacloprid and thiamethoxam seed treatments to control soybean aphids in Nebraska. The first year of the study had low aphid pressure (all below the economic threshold), and there were no differences in yield amongst the treatments. Aphid pressure was greater in the second year, and yield was higher in the treated plots than the untreated controls. Thiamethoxam kept aphid densities below the economic threshold, and imidacloprid reduced aphid densities, but not below the economic threshold. In fields managed based on threshold spraying, this would have resulted in a foliar spray still being applied to the imidacloprid treatment, negating the use of the neonicotinoid. While there was some yield benefit seen in this study, the planting dates were later, so systemic neonicotinoids were still active in the plants when aphid populations increased—this is not typically the case with soybean planting dates. Higher aphid pressures may overwhelm seed treatments and require secondary management strategies. Despite the moderate yield increases associated with neonicotinoid use in some portions of this study, the authors do not recommend their use, instead noting that "Nebraska soybean farmers would likely receive more consistent economic return by scouting fields and applying foliar insecticides only when necessary as indicated by economic thresholds."

Ohnesorg et al. (2009) utilized imidacloprid and thiamethoxam seed treatments to control soybean aphids in fields in Iowa. They compared seed treatments to foliar insecticides and an untreated control. The plots with foliar insecticides had lower soybean aphid populations and higher yields than those with seed-applied insecticides. During the first year of the experiment, some of the seed treatments provided significant yield benefits compared to the untreated control. In both years, the untreated control and seed treatment plots had the greatest exposure to aphid pressure, and in the second year, with moderate aphid pressure, there was no yield advantage from treating fields for aphids. The neonicotinoid seed treatments "provided limited, inconsistent yield protection to soybean that was occasionally not significantly different from the untreated control."

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Reisig et al. (2012) investigated imidacloprid and thiamethoxam seed treatments (all treated seed also included fungicides) for the control of thrips in soybean fields in Virginia and North Carolina. Thrips are the primary early season pest of soybeans in the region. The neonicotinoid seed treatments reduced the larval and adult thrips abundance, and thiamethoxam was more effective than imidacloprid at reducing adult thrips density. Despite this, there was no difference in yield between any treatments, and no yield benefit from neonicotinoid treatment. The authors note that "very little data have been published regarding the impact of insecticidal seed treatments, despite their widespread use in the mid-South."

Seagraves and Lundgren (2012) evaluated imidacloprid and thiamethoxam seed treatments in lab trials and field conditions (South Dakota) for their effects on soybean crops and insects. Lab experiments showed that seed treatment bioactivity was gone by 46 days after planting, which would typically be prior to aphid populations damaging crops in the field. There was no consistent effect of insecticidal seed treatments on soybean aphids, thrips, and grasshoppers, but bean leaf beetles were more abundant in the untreated plots in field experiments. In South Dakota, soybean aphid typically only exceeds economic thresholds after August 1, which is well beyond the bioactivity of seed treatments. Over the two years of the study, there was no yield benefit from using treated seeds. Insecticidal seed treatment is estimated to cost producers $12-15/acre, which is a cost that will not be recouped with additional yield if economically damaging pest populations do not occur while the compounds are active. The authors conclude that this research "not only confirms that insecticidal seed treatments have little effect on the key pest of soybeans, but also suggests that this prescriptive use of some of these insecticides may harm long-term IPM of soybean pests by reducing the abundance of their key natural enemies."

Tinsley et al. (2012) investigated the control of soybean aphids provided by aphid-resistant soybean lines and by thiamethoxam seed treatment. Soybean aphids reached economically significant levels in both years. Resistant plants experienced fewer cumulative aphid days, but yields were not significantly different. Thiamethoxam also reduced cumulative aphid days in one year of the study, but not the second year, and did not provide a yield benefit. "Evidence for the ability of thiamethoxam to reduce densities of soybean aphids in this experiment was inconclusive." Seed treatments are less effective against late-season pests—thiamethoxam's utility is limited and dependent on the timing of the infestation because the bioactivity of the compound declines throughout the season. This study "reinforces the economic utility of scouting for soybean aphids and only applying a foliar insecticide when densities reach economically threatening levels."

CANOLA, DRY BEANS, AND WHEAT

Soroka et al. (2008) investigated the efficacy of acetamiprid and clothianidin seed treatments to control flea beetle damage on canola in Manitoba and Saskatchewan. The authors compared various percentages of treated seeds in the planting mix to assess whether farmers could reduce the percentage of treated seed they are planting and still maintain yields. Decreasing treated seeds by one-third (67% treated) had no consistent effect on damage, yield, or cash return. Yields for 100% treated seed were only consistently above those with 67% treated seed under very heavy flea beetle pressure. In most trials, the damage levels on the 100% treated seed exceeded the economic threshold, which would have triggered a foliar insecticide application. In the year with the least pest pressure, feeding levels did not correlate with the amount of treated seed, suggesting that efficacy is reduced in moderate years and

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neonicotinoids are not providing benefits in those years. The authors concluded "reducing the proportion of treated seed sown by one third can be an effective means of reducing pesticide load to the environment while maintaining efficacy, especially in situations of low-to-medium flea beetle feeding pressure."

Pynenburg et al. (2011a) studied thiamethoxam seed treatment's ability to alleviate stress from weed pressure and white mold in dry bean fields in Ontario. The authors noted "no known published literature was found that studied the effect of thiamethoxam on plant vigor" and pesticide manufacturer representatives said that "more consistent benefits of thiamethoxam on plant vigor have been observed in dicot than monocot crops, and the benefits were more pronounced under abiotic stress conditions." Thiamethoxam had inconsistent effects with respect to plant emergence and vigor, harvested weight, seed weight, and economic returns. Each of these parameters was increased in some thiamethoxam plots and decreased in others compared to the controls, suggesting that overall, "the plant growth benefits of thiamethoxam are unclear and hard to quantify."

Pynenburg et al. (2011b) evaluated thiamethoxam seed treatment's plant enhancement abilities for dry bean production in Ontario to combat the stresses of annual weed pressure and anthracnose. Thiamethoxam increased emergence and vigor at only one location, contradicting reports of benefits from treatment. Seed quality was improved by thiamethoxam when results were pooled over all locations, but the authors could not explain this result because anthracnose severity was not reduced in thiamethoxam plots. Thiamethoxam had no effect on net yield or economic return. The authors concluded "thiamethoxam's potential to increase plant vigor was not clearly demonstrated, as it did not affect plant height, disease severity, net yield, or net economic return."

Royer et al. (2005) investigated the ability of imidacloprid seed treatment to control pests in hard red winter wheat grown in Oklahoma with several planting dates. Applying imidacloprid had varying results for aphid abundance, and in some cases the aphid abundance was not different from the untreated control. Grain yields increased with increased rates of imidacloprid application, but the economic return from imidacloprid was not usually positive. The lowest imidacloprid rate was the only rate to consistently provide a positive economic return across all planting dates. The authors note that "these data show how difficult it is to predict whether a prophylactic insecticide seed treatment will consistently pay for itself."

Wilde et al. (2001) evaluated thiamethoxam and imidacloprid seed treatments for insect control in winter wheat fields in Kansas. No yield benefit was seen in the field experiments, which had low to no pest pressure. Control of early season pests was demonstrated in greenhouse experiments with infested plants, but late season pest control was less effective and inconsistent. While the authors note that seed treatment could be useful in fields with chronic pressure from several pests, they conclude that "the use of seed treatments is economically risky where insect populations are variable" and that foliar treatments based on action thresholds are a better option.

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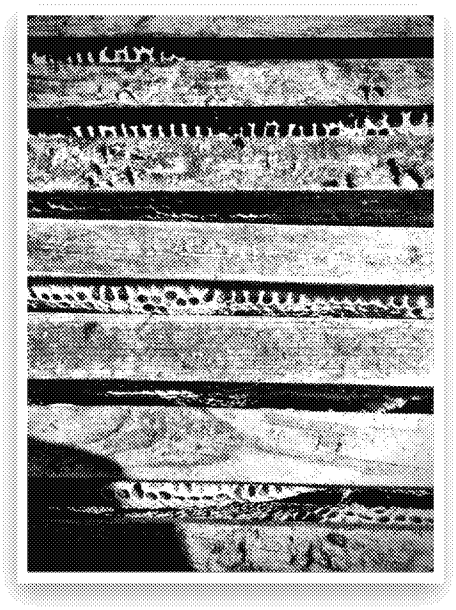
EXPERTS WEIGH IN ON LACK OF YIELD BENEFITS

Summary reports from France and Italy show neonicotinoids provide little if any economic benefit in many contexts. Unlike North American reports, these provide detailed *before* and *after* case studies because these countries have restricted neonicotinoid use on various crops. These examples support the limited yield benefits from neonicotinoids shown in North American research:



- France banned the use of imidacloprid on sunflowers in 1999 and on corn in 2004, but the yield trends for both crops through 2007 show that the productivity was not harmed by the loss of seed treatment as a pest control measure.[20]
- The Italian Ministry of Health announced in June 2012 that it would continue the suspension of clothianidin and thiamethoxam on corn originally imposed in 2009 in response to mass bee kills that clearly resulted from neonicotinoid use. Researchers found no evidence that the suspensions caused any economic harm in Italy; corn farmers there have seen no serious pest attacks on untreated seed crops and have maintained their yields.[21]
- In 2013, the European Union voted for a two-year minimum suspension of clothianidin, thiamethoxam, and imidacloprid on bee-attractive crops and limited ornamental use to approved applicators. This may provide another broad case study to assess yield impacts if reliable follow-up monitoring occurs. However, the potentially short duration of the suspension may not provide enough time to identify changes in honey bee health as the neonicotinoids persist in soil and may be taken up by subsequent crops.

Professor David Goulson's 2013 review of impacts, after documenting the lack of any identifiable crop yield increases in the United Kingdom associated with the introduction of neonicotinoids, states:

> "Given their widespread use, it is surprising that few studies have attempted to compare the effectiveness of neonicotinoids with alternative means of pest control. Bueno et al. (2011) compared managing soya pests in Brazil using either an IPM approach or prophylactic use of insecticides (the latter primarily based on imidacloprid). Crop yields were indistinguishable in the two treatments, but pesticide use and costs were much lower in the IPM treatment, demonstrating that this remains the best alternative in this system. In North America, Seagraves & Lundgren (2012) compared yield of either imidacloprid or thiamethoxam seed dressings on soya with untreated controls and found no difference in yield in either of the 2 years of their study, but populations of beneficial natural enemies were depressed in treated plots. In this system, the evidence would suggest that the cost of seed treatment (~$30 ha) is not being recouped by the farmer. This is in accordance with a several similar studies of soya which found either no yield benefits (McCornack & Ragsdale 2006; Cox, Shields & Cherney 2008; Ohnesorg, Johnson & O'Neal 2009) or yield benefits below those which could be achieved more economically using foliar insecticides applied only when pests exceeded a threshold (McCornack & Ragsdale 2006; Johnson et al. 2009). Similarly, studies of the efficacy of imidacloprid dressing of winter wheat in North America suggest that yield benefits are small (compared to unprotected, control crops) and often exceeded by the cost of the pesticide (Royer et al. 2005)."[22]

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Other respected experts concur with Dr. Goulson's overview:

- Dr. Christian Krupke, Department of Entomology, Purdue University, stated: "Part of the mission of my research and extension program is annual evaluation of pest management technologies in corn and soybeans—this is a critical source of unbiased efficacy data for growers. We attempt to challenge these technologies by placing them in fields with histories of pest damage. We have not demonstrated a consistent yield benefit of neonicotinoid seed treatments in either case, over many sites and many years. This is not because the products are not toxic; it is because insect pressure at the time that neonicotinoids are active (a brief window extending only a few weeks after planting) is either absent, or too high for neonicotinoids to effectively reduce pest damage. Because there is no demonstrable benefit in the vast majority of fields/years we have surveyed, it is apparent that seed treatments are dramatically overused in these crops (all corn and the majority of soybeans are treated)."[23]
- Dr. Jonathan Lundgren, a leading USDA Agricultural Research Service entomologist studying the effects of neonicotinoids, stated: "Farmers should question whether applying neonicotinoid seed treatments are more harmful than helpful on their farms. Public sector research on insecticidal seed treatments in soybeans from across the US consistently shows that spraying pests when they exceed thresholds is more profitable than prophylactic use of insecticidal seed treatments. In corn, I have not seen evidence that there are insect pests—beyond those targeted by Bt—that warrant consistent and prophylactic management. Finally, pest management decisions need to account for the costs that insecticides have against non-target organisms like predators and pollinators."[24]
- Tracy Baute, an Ontario Ministry of Agriculture and Food entomologist and IPM expert, stated: "Based on my experience, only 10 to 20% of the corn and soybean acres are actually at risk of most of the soil pests on the [neonicotinoid] product labels."[25] In other words, 80 to 90% of the use is unnecessary. Ontario's corn and soybean growing practices are similar to those in the northern portions of the US midwest corn and soybean regions.
- Dr. Christy Morrissey, Department of Biology, University of Saskatchewan, stated: "Although the dogma that has been promoted is that we really need these chemicals in order to protect crops...there actually is very little evidence to support the extremely widespread use of these chemicals."[26]

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COSTS AND DETRIMENTAL IMPACTS OF NEONICOTINOIDS

The use of neonicotinoid seed treatments is associated with a wide range of detrimental impacts, the majority of which are not fully considered by EPA as the agency evaluates proposed product registrations. These market and other impacts, summarized below, are not without additional consequences. Major financial institution reports indicate that neonicotinoid harms to honey bees and related pollinator declines could depress stock values of some publicly-held companies and harm critical agricultural sectors.[27] Farmers are paying unnecessarily for pest protection that in many cases they are not receiving. EPA must weigh all of the costs, both documented and foreseeable, along with the lack of significant crop yield benefits.

HONEY BEE COLONY IMPACTS

Science has linked neonicotinoid use to honey bee and bumblebee impacts.[28] Hundreds of documented reports detail acute mass honey bee kills via contaminated dust (graphite and talc) from planting treated corn seeds. Further, chronic ingestion of neonicotinoids can harm their foraging success and colony strength, as honey bees are social insects that rely heavily on memory, cognition, and communication. Researchers "clearly demonstrate[d] an increase in pathogen growth within individual bees reared in colonies exposed to one of the most widely used pesticides worldwide, imidacloprid, at below levels considered harmful to bees," suggesting that nonlethal effects to honey bees from low exposure levels may be extremely damaging.[29]

Prior to 2006—when neonicotinoids were beginning to be used on a nationwide scale—commercial beekeepers and honey producers typically anticipated losing fewer than 10% of their bees each year, mostly due to overwintering mortality. Losses of that magnitude were sustainable because they could be recovered by splitting hives, adding new queens, and other measures. Since 2006, however, overwintering losses have risen dramatically. While this correlation does not equate to causation, the trend is remarkable. Surveys conducted by the Department of Agriculture (USDA) show that 28% to 33% of total honey bee colonies died each winter from 2007 to 2011.[30] Winter losses dipped to 22% in 2012, but the 2013 survey indicated 31% of colonies died.[31] Compounding these overwintering losses is a marked increase in summer mortality, the season when bee populations should be thriving. According to USDA, "since 2006 an estimated 10 million bee hives at an approximate current value of $200 each have been lost, and the total replacement costs of **$2 billion dollars** has been borne by the beekeepers alone [emphasis added]."[32] That statement refers to a six-year period, thus a rough estimate of annual replacement cost is **about $300 million per year.** This magnitude of annual uninsured losses is unsustainable.

The role of neonicotinoids in honey bee decline continues to be debated. Just as there is no unassailable scientific study, there is no "smoking gun" to point to as the cause of honey bee decline. Honey bees are impacted negatively by many interacting, and sometimes synergistic, stressors. However, there are many studies across various scales that clearly demonstrate that neonicotinoids negatively affect honey bees. Whether this role is large or small may depend on the intensity of neonicotinoid use in a given region. However, when this is balanced against the reality that neonicotinoids provide little tangible benefit across the cropping systems where they are most widely used, it rapidly becomes apparent that the status quo can, and should, change.

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REDUCED CROP POLLINATION BY HONEY BEES

The nationwide decline of honey bee colonies is not only a financial and personal crisis for commercial beekeepers and honey producers; it is also a direct hazard to the nation's food supply. Scientists estimate that one-third of the food people eat—and an even greater proportion of high value nutrient and vitamin sources—comes from crops that will not make fruit or seed unless they are pollinated.[33] As summarized by USDA:

> "It is imperative that we increase honey bee survival both to make beekeeping profitable but more importantly to meet the demands of US agriculture for pollination and thus ensure food security.... Currently, the survivorship of honey bee colonies is too low for us to be confident in our ability to meet the pollination demands of US agricultural crops."[34]

A prominent USDA researcher has warned that, unless trends are reversed, "[w]e are one poor weather event or high winter bee loss away from a pollination disaster."[35]

In weighing the costs to pollinators and other beneficial insects, EPA must consider the role of neonicotinoids in relation to managed honey bee and other pollinator populations. These have been valued by Kansas State University at **$12.8 billion**, based on documented average annual yield benefits for ten major crops.[36] There are more than 100 crops in North America that benefit from pollinators.[37] Kansas State researchers found that through 2010, the value of US agriculture declined by approximately **$75 million per year** compared to 1986 values due to declining pollinator numbers for the major crops they assessed. While recognizing several factors in these declines, they identified neonicotinoids as key drivers:

> "Insecticides and pesticides are applied not only on agricultural fields, but also on golf courses, in residential areas, across rangelands, etc. These pesticides and insecticides generally do not kill pollinators outright, but instead impair their development and behavior (Johnson 2010); for example, agrochemicals cause impaired odor discrimination and abnormal communication dances, which can cause mistakes in estimating distances and direction to food sources (Kearns and Inouye 1997; Thompson 2003). Gill et al. (2012) reported reduced worker foraging performance, especially pollen collecting efficiency, with chronic exposure of neonicotinoid and pyrethroid pesticide in bumblebees. Also they showed field-level exposure of these pesticides caused reduction in brood development and colony success. When agrochemical use is associated with reduced use of crop rotations, crop diversity and availability of other pollen sources are also lessened, which compounds the negative impacts on pollinators."[38]

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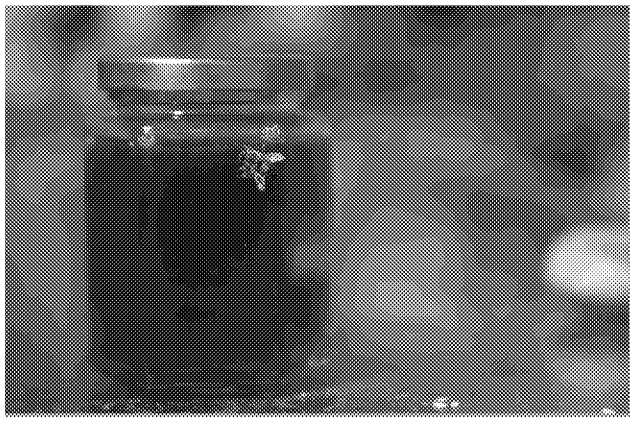
These findings of pollinator impacts have been consistently observed and confirmed by independent scientists. According to EPA's and USDA's estimates, pollination contributes **$20 to $30 billion** in crop production annually to the US economy.[39] These massive and declining pollinator-driven crop yield benefits must be weighed against the often marginal or illusory neonicotinoid-driven crop yield benefits. The values in the Kansas State and the EPA and USDA estimates, are national-level and omit accounting for lost earnings and other financial damage to commercial beekeepers themselves, who create the bulk of that crop yield enhancement through their pollination services and colony management. Compounding the sting of these losses is the fact that EPA currently lacks a complete accounting of the economic benefits of honey bees as the agency weighs the costs insecticides pose to beekeepers.[40]

The ongoing operational and financial damage to the small cadre of fewer than 1,000 major commercial pollinating beekeepers nationwide is jeopardizing **tens of billions of dollars** of national crop-yield benefit from pollination. As bee losses mount, beekeepers must replace them to fulfill pollination contracts and raise their prices accordingly, the costs of which are, in turn, passed on to producers and consumers. If the aging and dwindling beekeeper workforce continues to struggle financially and fades away, major shockwaves would reverberate through the agricultural economy.[41]

Given the data we review in this report, over many years, locations, and cropping systems, there are no consistent benefits from using treated seeds in pest management. Coupled with EPA and USDA's own estimates, it is unreasonable for EPA's pesticide registration department to continue to allow the pursuit of non-existent or insignificant yield benefits for corn, soybeans, and other crops while contributing to mass declines in pollinators, major yield reductions in pollinator-dependent crops, and financial damages to beekeepers.



REDUCED PRODUCTION OF HONEY & OTHER BEE PRODUCTS

The impacts of neonicotinoids on honey and other bee product declines are complex. It is clear that total US honey production has dropped by more than 25% since 1994, when the first neonicotinoid (imidacloprid) was registered for use.[42] The national crop from 2013 is expected to be the *smallest honey crop ever reported* by a large margin, with a mid-range estimate of 114 million pounds compared to a mid-range estimate of 135 million pounds in 2012.[43] The average bulk wholesale value of the lost production of **21 million pounds** compared to 2012 was approximately **$38 million**.

Analysis of crop reductions over time indicates that the states with drastic honey crop declines in recent years are those in the Corn Belt with the most widespread use of neonicotinoid treated seeds, including, but not limited to, Illinois, Indiana, Iowa, Kansas, Missouri, and Nebraska.[44] Honey production in Florida, which as recently as 2000 was very high, has dropped roughly in half since the citrus psyllid was found and orange grove infections led to massive increases in use of neonicotinoids and other insecticides.[45] While statistical certainty on the causes of declines across a broad industry sector will remain elusive, the apparent contributing role of neonicotinoid-induced colony losses in huge reductions in honey, beeswax, and other valuable bee products must be taken into account.

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LOSS OF ECOSYSTEM SERVICES

EPA must weigh the frequent lack of neonicotinoid yield benefits against the tremendous environmental and economic benefits and ecosystem services that neonicotinoids are jeopardizing. This goes far beyond more readily-quantified reductions in managed honey bees and bee products. Acute and chronic effects similar to those impacting honey bees can harm bumblebees and other valuable, beneficial invertebrates such as lady bugs, ground beetles, earthworms, and parasitoid wasps.[46] Beneficial invertebrates are essential, often unnoticed, components of healthy agricultural fields, landscapes, gardens, and natural systems.

In 2006, researchers estimated the value of native insect pollination for US crops at **$3.07 billion**.[47] More recently, in California alone, researchers estimated wild pollinators produce between **$937 million and $2.4 billion** per year in economic value.[48] Beyond crop pollination, beneficial predatory and parasitic insects and other arthropods provide natural pest suppression to farms, an ecosystem service valued at more than **$4.5 billion** per year, as well as to natural areas and developed landscapes.[49] Water contamination from neonicotinoids has been identified in several agricultural regions and linked to detrimental impacts in aquatic ecosystems.[50]

There are sweepingly important indirect benefits—virtually beyond calculation—gained by non-crop plant communities sustained through pollination.[51] These include the aesthetic values of flowers and ornamental plants, reduction of soil erosion, food and forage for wildlife, and maintenance of forest, grassland, desert, and other broad ecological dynamics. In 2006, Losey and Vaughan calculated the value of ecosystem services to humans from all wild insects in the US to reach **$60 billion**.[52]

MARKET DAMAGE FROM CONTAMINATION EVENTS

New financial harm from neonicotinoids has also surfaced. In February 2014, exports from Canada to Japan of the specialty, high-value grain buckwheat, were rejected due to levels of thiamethoxam contamination exceeding Japan's maximum residue limit.[53] The buckwheat farmers apparently did not use thiamethoxam on that crop—it persisted in contaminated soil from earlier plantings of other crops or was carried into their fields via air or dust. This sole incident led to the costly rejection of two container loads of buckwheat and is an ongoing problem could lead to the loss of additional export markets.[54]

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CONCLUSIONS

It appears EPA has overvalued the "insurance" neonicotinoids offer against often non-existent or insignificant pest pressures in many contexts. This overuse, a direct result of EPA's regulatory approval process, imposes heavy costs to the agricultural community and the nation as a whole. "Pre-sterilizing" fields has, in effect, rendered integrated pest management, in which pesticides are only used if economic pest damage thresholds are exceeded, obsolete for those crops:

> "The widespread adoption of neonicotinoids as seed dressings has led to a move away from integrated pest management (IPM), a philosophy of pest management predicated on minimizing use of chemical pesticides via monitoring of pest populations, making maximum use of biological and cultural controls, applying chemical pesticides only when needed and avoiding broad-spectrum, persistent compounds."[55]

A 2014 report by the multi-stakeholder Corn Dust Research Consortium on neonicotinoid seed treatments and their impacts on honey bees contains these related recommendations:

- Minimize unnecessary use of seed treatment insecticides. Use them only when needed, such as where historic pest infestations are above threshold or high risk factors for pest pressure have been anticipated or determined.
- Follow the principles of integrated pest management.[56]

The broadly-supported Corn Dust Research Consortium report undercuts EPA's history of enabling unrestricted neonicotinoid use and promotes IPM as the better alternative. However, exhortations and voluntary recommendations will not change the reality of overuse spurred by advertising campaigns promoting these products directly to seed dealers and farmers. The market for seeds is heavily monopolized by a few companies.[57] In reality, US farmers often have almost no choice—untreated seeds are simply not available in most markets. It must also be recognized that synthetic neonicotinoid insecticides are not approved in organic agriculture. The harms neonicotinoids pose in and around conventional farm fields can damage nearby organic operations that rely on healthy ecosystems.

In conclusion, recent reports evaluated here examining the benefits of neonicotinoid seed treatments for crop yields in North America found they were largely illusory. European reports of crop yields being maintained even after regional neonicotinoid bans corroborate this finding. Opinions from several independent experts reinforce that neonicotinoids are massively overused in the US, without a corresponding yield benefit, across numerous agricultural contexts. The bottom line is that toxic insecticides are being unnecessarily applied in most cases.

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RECOMMENDATIONS

In order to fully evaluate future insecticide registration applications and comply with the FIFRA mandate to account for costs and benefits, EPA should:

- Fully weigh both quantifiable and unquantifiable values in assessments of proposed systemic insecticide products, including at a minimum these foreseeable cost categories:
  1) honey bee colony impacts and resulting reduced yields of pollinated crops,
  2) reduced production of honey and other bee products,
  3) financial harm to beekeepers and consumers,
  4) loss of ecosystem services, and
  5) market damage from contamination events.
- Require verification by independent scientists and economists (preferably published in peer-reviewed journals) for claims of efficacy, crop yields, and economic benefits associated with all products.
- Reject applications to register any prophylactic insecticides that undermine basic IPM principles, may harm organic farm production, or are not cost-effective, either for the farmer or the nation as a whole.
- For all insecticidal seed treatment products, repeal the agency's waiver for "product performance data" in the FIFRA Product Performance regulation at 50 CFR § 158.400(e)(1) because of their prophylactic overuse, lack of efficacy, unique persistence, and high overall costs. Related to that, EPA also should promptly enforce the mandate in that regulation that: "each registrant must ensure through testing that his [sic] product is efficacious when used in accordance with label directions and commonly accepted pest control practices."

In light of the findings of this report, EPA should suspend all existing registrations of neonicotinoid seed treatment products whose costs and benefits have not been adequately weighed until this accounting is completed.

TO LEARN MORE, VISIT
WWW.CENTERFORFOODSAFETY.ORG

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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OFFICE OF CHEMICAL SAFETY
AND POLLUTION PREVENTION

MEMORANDUM

SUBJECT: Biological and Economic Analysis Division (BEAD) Response to Public Comments Submitted in Response to BEAD's Assessment entitled "Benefits of Neonicotinoid Seed Treatments to Soybean Production" Dated October 15, 2014, OPP Docket: EPA-HQ-OPP-2014-0737

FROM: Clayton Myers, Ph.D., Senior Biologist
Nikhil Mallampalli, Ph.D., Entomologist
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TJ Wyatt, Economist
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THRU: Monisha Kaul, Chief
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Tim Kiely, Chief
Economic Analysis Branch

TO: Neil Anderson, Chief
Risk Management and Implementation Branch I (RMIB 1)
Pesticide Re-evaluation Division (7508P)

Product Review Panel: December 21, 2015

INTRODUCTION

In October, 2014, the Biological and Economic Analysis Division's (BEAD) of the Office of Pesticide Programs (OPP) published an assessment of the value soybean growers obtained from the use of nitroguanidine neonicotinoids, imidacloprid, thiamethoxam, and clothianidin, as seed treatments, "Benefits of Neonicotinoid Seed Treatments to Soybean Production" (Myers and Hill, 2014). BEAD concluded in that assessment that these seed treatments provided negligible benefits on average to soybean producers in most situations. In comparison to the next best alternative pest control measures, BEAD estimated that, on average across the U.S., growers were likely to obtain $0 to $6 per acre in benefits by using one of these neonicotinoid seed treatment products on soybeans. This represents an impact of 0% to 1.7% to net operating revenue. Given the distribution of benefits across the treated acreage, BEAD estimated the total benefit to the soybean industry to be at most $52 million per year. BEAD also noted potential insurance benefits of neonicotinoid seed treatments against sporadic and unpredictable pests. However, BEAD did not find publically available information on the magnitude or significance of these potential benefits. BEAD found that these benefits may be particularly relevant for the southeastern United States, but characterized them as uncertainties.

OPP received numerous public comments in response to the assessment. Of the more than 40,000 public comments submitted to the EPA docket in response to this assessment, BEAD has identified approximately 150 comments that contained substantive information and/or cited additional data that was directly relevant to BEAD's analysis. Other comments beyond this group mainly consisted of letter-writing campaigns by multiple stakeholders (i.e., redundant content), mainly in opposition to neonicotinoids, generalized comments to the Agency that did not directly address BEAD's assessment, or non-substantive comments that provided no additional information, citations, or any useful material. These non-substantive comments are not addressed here.

BEAD is herein providing responses to the approximately 150 substantive comments submitted, or in some cases, groups of comments with similar content. As a result of these comments, BEAD is revising some of the conclusions of the initial assessment as summarized below.

SUMMARY OF NEW CONCLUSIONS

Numerous commenters stated that the original analysis on the benefits of seed treatments on soybeans did not adequately address differences in pest control needs by region. BEAD acknowledges this limitation and, given data and information provided through the public comment period, modifies the estimated impacts for two areas of the country where usage of neonicotinoid seed treatments is likely to have higher benefits than the national average as presented in BEAD's initial analysis.

- In the mid-South, including the states of LA, MS, AR, TN, and MO, climatic, biological, and agronomic practices combine to cause a high level of pest pressure from soil-dwelling insects, many of which are not well-identified. BEAD estimates that ~8% impact on net revenue ($23 per acre) is possible for areas in the mid-South with known

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high pressure from soil pests if neonicotinoid seed treatments are not available. This result assumes that permethrin seed treatments, although similar in cost and efficacy for soil pests, remain unmarketed in the United States. If permethrin seed treatments become available for widespread use, then estimated impacts would be negligible.

- For the Midwestern U.S., comprised mainly of IA, NE, SD, ND, MN, IL, WI, etc. commenters pointed out that bean pod mottle virus (BPMV) vectored by bean leaf beetle (BLB) is a significant concern. BEAD also agrees that the relative benefits of seed treatment are likely to be high for this region. BEAD projects that around a 1% impact ($5 per acre) on net revenue is likely for situations where one foliar insecticide application is made and around a 4% ($17 per acre) impact on net revenue is projected for the rare situations where a second application is made within the early-season window of typical seed treatment bioactivity. BEAD's estimate for this cost differential may underestimate the impacts somewhat since there is a risk that ground applications cannot be made in the early season due to wet conditions (though BLB could still be adequately controlled with a later application).

Numerous comments from the Agricultural Research Service of the Department of Agriculture (USDA-ARS) and university extension experts, support BEAD's original conclusions that, outside of these two areas, the benefits of neonicotinoid seed treatments are generally low for most soybean growers in the United States.

BEAD estimates the total benefits of neonicotinoid seed treatments nationally to be up to $215 million per year.

ORGANIZATION OF BEAD'S COMMENT RESPONSES:

BEAD's responses to comments is organized into four main groups:

I. Responses to broad and generalized topics that were raised in numerous comments and where there was extensive overlap and commonality between comments.

II. Responses to specific topics with some overlap commonality between several substantially similar comments.

III. Responses to specific topics and often extensive comments submitted by individuals or groups that are unique in some regard and necessitated a specific response.

IV. Revised benefits assessment conclusions, including a summary of general revisions, corrections, refinements, remaining uncertainties, and overall responses to major substantive concerns.

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I. BROAD/GENERAL TOPICS

Because numerous submitted public comments cited identical information, identified common concerns, or shared common elements, BEAD will herein paraphrase and broadly categorize the most commonly submitted comments and respond by topic, rather than on a comment by comment basis. Appendix I provides a list of the comments, by docket reference number, addressed by each of BEAD's responses.

1. BEAD's release of a benefit assessment prior to release of a risk assessment is unusual, improper, invalid, and politically motivated.

   BEAD RESPONSE: OPP will respond separately to comments that relate to OPP's processes, procedures, and scientific quality standards.
   In general, during Registration Review, EPA conducts both human health and ecological risk assessments and issues them at the same time. Assessments of pesticide benefits or of impacts of potential risk management actions are issued at the same time as the proposed registration review decision. Due to the role the neonicotinoid insecticides have occupied in the dialogue around pollinator health, EPA initiated specific pollinator risk assessments for clothianidin, dinotefuran, imidacloprid, and thiamethoxam, following the harmonized pollinator assessment framework developed by the Agency in collaboration with other regulatory entities (EPA, PMRA, CDPR, 2014). Seed treatments were particularly contentious. See, for example, the Center for Food Safety Report, "Pollinators and Pesticides" (CFS, 2013). Moreover, some published research review material at the time (Stevens and Jenkins, 2014) found limited benefits to the use of neonicotinoid seed treatments. OPP, therefore, decided to review the available information, inform the public of its findings, and solicit comments. While unusual in timing, the assessment was not a violation of any review process.

   BEAD also notes that the publication of its assessment has elicited numerous comments and brought about valuable input from additional stakeholders that has helped BEAD to refine its estimates. BEAD has incorporated additional data submitted by registrants, university researchers, and other stakeholders and has revised impact estimates accordingly. This is precisely the point of a public comment process and BEAD appreciates the input it has received.

2. BEAD did not follow, or did not have in place, appropriate processes for collecting information to conduct the assessment.

   BEAD RESPONSE: OPP will respond separately to comments that relate to OPP's processes and procedures.
   BEAD followed the usual process for conducting a benefit assessment. The benefits of a pesticide for the user are evaluated in comparison to the available alternatives for the same use. Briefly, the Division relies on pesticide labels, market research data, and extension publications to identify the pests targeted by a pesticide application and to identify possible alternatives that could be used. Likely alternatives are chosen based on economic theory and biological considerations. The benefits of a pesticide's use are

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measured in comparison to the next best available pest control option in terms of increased pest control costs per acre or, if appropriate, losses in yield or quality of product. Market research data and extension publications inform the estimates of cost differentials and comparative product performance. The Division frequently solicits input from research personnel through contacts with USDA's Office of Pest Management Policy (USDA OPMP). These procedures were followed to gather information to conduct the assessment of benefits of neonicotinoid soybean seed treatments.

3. BEAD underestimated or didn't account for numerous effects of seed treatments, including non-monetary benefits, as follows:
    a. Seed treatments pose lesser/fewer risks to pollinators and workers than foliar alternatives.
    b. Seed treatments have minimal off-site drift in comparison to foliar alternatives.
    c. Risks of neonicotinoid seed treatments and their alternatives.
    d. Environmental costs associated with the use of neonicotinoid seed treatments (i.e., reduced value of ecosystem services) and, specifically, yield benefits of bee pollination into account with our benefit assessment.

BEAD RESPONSE: FIFRA mandates that EPA consider both the risks and the benefits of the use of the pesticide in determining whether the pesticide causes 'unreasonable' adverse effects. BEAD's memo was an analysis of the benefits to the user, not a risk-benefit analysis or regulatory decision document. The purpose of this assessment is to describe and, if possible, quantify the benefits neonicotinoid seed treatments offer to soybean growers in comparison to likely alternatives. It will be used to inform decisions in the review of the registrations for these active ingredients in conjunction with human health and ecological risk assessments. The environmental effects of the pesticide are addressed in the risk assessments. This analysis, other benefit analyses, and information gathered through the public comment periods will be used in the course of registration review to balance risks and benefits of neonicotinoid insecticides. Information on the comparative risks to human health and the environment of any alternatives will be considered in any future risk management or risk mitigation decisions.

    e. Seed treatments allow for early planting into cool and/or wet soils.

BEAD RESPONSE: BEAD has received numerous comments and additional information regarding the importance of early planting of soybeans, particularly in the mid-South United States, and a more detailed specific response to those issues is presented in Comment II.3. BEAD did not originally take planting date into account when estimating benefits of treated soybean seed, and now has incorporated this agronomic benefit into its analysis of the mid-South production region. Because early planting often coincides with cool and damp soils that are conducive to higher populations of some soil-borne insect pests, the use of insecticide-treated seed can provide a useful insurance-based protection against attack from these pests. BEAD notes that a permethrin seed treatment product is registered for use on soybeans and available (although not widely used at this time), and that this product has been demonstrated to be efficacious against seedcorn maggots (Hammond, 2002). However, other commenters

have noted that they are uncertain about the actual availability of this product. BEAD understands that given the apparent limited availability of permethrin treated seed, and the lack of any systemic activity (i.e., no protection of the plant after germination) this may not necessarily be an ideal alternative to seed treated with neonicotinoids.

f. Seed treatments preclude the need for foliar spraying on soybeans.

BEAD RESPONSE: BEAD disagrees with this comment and has determined that seed treatment adoption has not resulted in a reduction in foliar insecticide usage on soybeans. BEAD analyzed data on pesticide use from 1998-2013 for soybeans and notes that usage of foliar insecticides has increased appreciably over the same time period as the observed increased usage of neonicotinoid seed treatments, 2004-present (MRD, 1998-2013). While it is true that significant soybean acreage in the U.S. that is treated with insecticide receives only a seed treatment, it remains notable that prior to 2004, almost no insecticide usage was observed on soybeans at all. Also, given the lack of an identified target pest for much of this usage, and based on a number of other submitted comments, BEAD is confident in concluding that much of this existing seed treatment usage on soybeans is preventative, and that in the hypothetical absence of neonicotinoid seed treatments, much of this acreage would remain untreated with any insecticide. Furthermore, given that neonicotinoid seed treatments are known to only confer 3-4 weeks of protection to the emerging plant after planting, that later season outbreaks of bean leaf beetles, soybean aphids, or other foliar feeding pests that exceed threshold would still necessitate a foliar insecticide application. This is particularly true for areas of the U.S. that have seen heavy infestation pressure from soybean aphid, which is most often observed later in the growing season, long after any protective efficacy would be observed from neonicotinoid residues remaining in plants from treatment of the seeds. BEAD agrees that there are conceivable examples of situations where a seed treatment could preclude an early season foliar insecticide application (particularly for control of bean leaf beetles in areas where the bean pod mottle virus is present, which is discussed later). BEAD does not agree with the implication that seed treatments always, or even often, preclude the need for a subsequent foliar spray, particularly in situations where late-arriving pests become established and exceed treatment thresholds.

g. Seed treatments preclude the need for soybean re-planting.
h. Seed treatments allow for reduced tillage systems to be effective.

BEAD RESPONSE: BEAD agrees that in instances where soil pest pressure necessitates control, that neonicotinoid seed treatments are very effective at protecting the seed from damage and thus precluding the need for replant. BEAD notes that seed treatments containing permethrin remain registered, are effective against soil pests such as seedcorn maggot (Hammond, 2002) and are available for use on soybeans in the United States, although these products are apparently not widely used or marketed, according to MRD (2004-2013) as well as input from other commenters. The lack of usage may be due to the widespread existing usage of neonicotinoid seed treatments. However, BEAD also understands that given the possible limited availability of permethrin treated seed, and the lack of any systemic activity (i.e., protection of the plant after germination) this may not

necessarily be an ideal alternative to seed treated with neonicotinoids. In an additional response below (Comment II.3), BEAD acknowledges that in some areas of the United States, the agronomic practices described above are more common for soybeans. For those instances, BEAD concurs that the benefits of preventative seed treatment usage in soybeans are likely to be higher than what was estimated in BEAD's original assessment.

i. Seed treatments confer increased convenience.

BEAD RESPONSE: While BEAD's original assessment assumed that applications of alternative foliar insecticides could be done via tank-mixing with other pesticides already being applied to fields, BEAD acknowledges that a number of technical and timing issues can preclude the ability of growers to tank mix an alternative insecticide with an herbicide or fungicide application. BEAD discusses this in more detail below and revises the impact estimate to include the cost for additional pass(es) over fields. Beyond the cost of the additional pass over the field, BEAD has not been able to quantify the value of 'convenience' for growers, since the use of seed treatments alone does not necessarily preclude the subsequent need for scouting and potentially additional pesticide applications to a field, beyond the typical period of bioactivity for seed treatments (i.e., 3-4 weeks after planting).

j. Seed treatments provide jobs in the seed treatment sector.

BEAD RESPONSE: Such considerations are generally beyond the scope of an analysis of the benefits of the use of a pesticide. BEAD evaluates grower impacts as a means of assessing impacts on the agricultural economy. Often, constraints on one pesticide lead users to shift to another pesticide (or application method) implying that 'upstream' impacts are generally off-setting. Moreover, treating seeds may pose occupational risks, which are subject to separate human health assessments and risk management considerations.

4. The high adoption rates of seed treatments are themselves indicative of benefits; i.e., if growers didn't see real benefits from use of seed treatments, they wouldn't use them on such a large scale.

BEAD RESPONSE: BEAD agrees that widespread use of a pesticide can be indicative of benefits to the use of the pesticide (or application method). However, widespread use is not necessarily correlated with the magnitude of benefits on a per-acre or per-farm basis. Moreover, in the case of seed treatments, farmers may not have complete choice. Seed treatments are often subject to seed company marketing agreements and are often packaged according to pre-selected regional criteria. USDA-ARS (see comment EPA-HQ-OPP-0737-0943), and other commenters, including soybean entomologists and Extension experts that responded to the USDA IPM Center's questionnaire (Myers and Hill, 2014) have indicated that it can often be very difficult for soybean growers to obtain the specific varieties of soybeans they want without getting a seed treatment package that may include fungicides, neonicotinoid insecticides, or both. Other commenters, particularly registrants, indicate that choice of seed treatments is not an issue. While it is

true that many soybean seed treatments are applied downstream from the original seed packager (in contrast to corn, for example), BEAD has been made aware of situations where the difficulty in de-coupling seed treatment options has made it onerous for some growers to obtain seed without a neonicotinoid insecticide seed treatment applied. Data on pesticide use (MRD, 2004-2014) indicate that approximately 59% of soybean seed treatment insecticides (by weight, nearly all of which is neonicotinoids) is applied commercially. Another 39% is applied downstream by retailers who may be responsive to the requests of individual customers (growers). Only 2% of products are applied 'on-farm.' If widespread issues indeed exist with growers being able to obtain untreated seed, this situation would belie the notion that growers are making independent, site-specific pest management choices and would thus contradict any correlations between the actual need/demand for seed treatments with their observed rates of adoption.

5. Neonicotinoid seed treatments are the only viable option in soybeans for controlling soil pests, which are very difficult to scout and are often sporadic in occurrence/economic importance. This was particularly emphasized for soybeans in the mid-South U.S., due to various agronomic factors occurring in that growing region.

   BEAD RESPONSE: BEAD further discusses more specific comments in Section II.3. pertaining to the particular pest management needs of soybean growers in the mid-South. While BEAD agrees that soil pests are problematic with regard to scouting and predicting outbreaks, permethrin seed treatments are an effective, registered method for controlling soil pests, such as seedcorn maggot (Hammond, 2002). BEAD confirmed with the registrant that the permethrin seed treatment products are being produced and marketed. However, discussions with numerous extension experts, particularly in the mid-South indicated that these products may not be widely marketed. BEAD understands that given the apparent limited availability of permethrin treated seed (possibly due to low production that is driven by the current availability of neonicotinoids) and the lack of any systemic activity (i.e., protection of the plant after germination), this may not necessarily be an ideal alternative to seed treated with neonicotinoids. Numerous commenters have underscored the potential difficulty in controlling problematic soil pests if neonicotinoid treated seed was not available.

6. On preventative/prophylactic pesticide usage:
   a. Prophylactic applications are not a favorable approach for integrated pest management.
   b. Prophylactic pest control tactics can be a legitimate and useful tactic within a larger IPM framework, and just because target pest populations aren't always known at the time of planting, does not mean that seed treatments are unnecessary or without benefits.

   BEAD RESPONSE: A cornerstone of integrated pest management (IPM) is the concept that any pest control tactics must effectively target pests that are expected to cause economic damage. The decision to deploy any tactic is therefore based upon an understanding of the expected benefits of the tactic in terms of protected value from yield and/or quality. Some pest problems occur in agriculture with such frequency and

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predictable regularity that preventative or prophylactic approaches are very often warranted. Any such decision requires background information about the site history, soil and climatic conditions, agronomic practices, and past pest incidence. For sites with a known history of infestation from problematic pests, a pre-planting decision to make use of a prophylactic control tactic such as insecticidal seed treatment may well be the most biologically and economically preferred option. On the whole, there is nothing in any widely accepted definition of IPM that automatically precludes the judicious use of preventative tactics. However, if there is reason to believe that pest pressure will not exceed established economic thresholds or if there is no history of problematic pest occurrence at a given site, the benefits of preventative tactics may be low, or at the least, much less certain. BEAD concludes that for instances where pest pressure is known to be low or where there is little to no history of past pest problems, and given the availability of effective alternatives to control even a large emergence of those pests later, the benefits of preventative treatments are likely to be negligible.

7. BEAD was too selective and narrowly focused in their data analyses and did not take into account data on benefits from registrants and the contracted analysis done by AgInfomatics (2014).

   BEAD RESPONSE: BEAD worked with the USDA's Office of Pest Management Policy (OPMP) and the North Central IPM Center to collect information, including unpublished data. Because registrants are not required to submit efficacy data for agricultural pesticides unless specifically requested by the Agency and except as provided under FIFRA Section 6(a)(2), BEAD did not have immediate access to data held by registrants and did not require submission of such data. It is unclear how much of the available data would have taken efficacy measurements all the way to measuring crop yield, which is the type of data necessary for BEAD's analysis. The 2014 AgInfomatics analysis was not submitted until after BEAD had completed and released its draft analysis. BEAD has received numerous sets of additional data from multiple registrants, analyzed the submission from AgInfomatics (which included an analysis of a larger data set and included registrant data), and considered this information in the revised benefits assessment. It is notable that BEAD's original impact estimates of 0-$6 per acre for soybeans was comparable to the impact projected by AgInfomatics ($3.30 per acre for soybeans).

   Finally, all comments and additional data received will be considered before any risk management proposal is made. BEAD re-iterates that seed treatment efficacy against target pests is well-established and not at all in question with regard to this analysis. BEAD recognizes that these products are effective. The question of benefits is a separate issue.

8. On numerous anecdotal or site-specific claims:
   a. Numerous anecdotal submissions were cited where growers, contract researchers, etc. provided estimates of benefit based on unpublished data, personal experience, etc., including claims of approximately 5% to 30% yield protection from use of seed treatments.

b. Numerous anecdotal submissions were cited where growers, contract researchers, etc. claimed that there are no benefits of seed treatment usage, based on unpublished data, personal experience, etc.

BEAD RESPONSE: BEAD appreciates the information submitted. In evaluating yield protection/effectiveness, BEAD relies upon studies that are deemed suitable for publication in either the peer-reviewed public literature or in the Entomological Society of America's technically reviewed journal Arthropod Management Tests. While BEAD will review unpublished data, the overall study design, replication, and reproducibility must be commensurate with data that are typically submitted to such journals. Because myriad uncontrolled variables can affect pest densities and product performance on a farm by farm basis, BEAD realizes that there are cases where any specific pest control measure can out-perform or under-perform compared to results observed in controlled and replicated studies.

9. Numerous comments offered a general defense and broadly defined benefit descriptions for neonicotinoids on other crops and argued generally for the value of growers having multiple options in their respective pest management tool boxes for control of insect pests on agronomic and specialty crops.

   BEAD RESPONSE: BEAD's memo was solely focused on the use of neonicotinoid seed treatments on one single crop: soybeans. While BEAD appreciates the information submitted regarding benefits of neonicotinoid insecticide usage on other crops, this information is not germane to the specific question of benefits of seed treatments on soybeans. BEAD agrees that broadly speaking, it is generally preferable to have access to a variety of insecticidal tools and tactics, for the purposes of resistance management, production flexibility, and enhanced IPM sustainability.

10. BEAD should release reviews for other crops, especially corn and canola.

    BEAD RESPONSE: As part of OPP's ongoing registration review process, analysis of benefits for any pesticide and/or chemical use pattern may include additional evaluations of seed treatments and foliar applications on additional crops. If forthcoming risk assessments or other information indicate that seed treatment usage on additional crops could drive unacceptable levels of risk, BEAD will consider the benefits of seed treatments on those additional crops to inform the Agency's registration review decisions. OPP will provide an opportunity for public comment on any registration review decision.

11. BEAD should not wait for the registration review process to proceed before conducting benefit analyses for neonicotinoid use on other crops and OPP should not wait to take regulatory action on the neonicotinoids, based upon established risks.

    BEAD RESPONSE: BEAD will conduct additional benefits assessments when OPP determines it is necessary to conduct such assessments to evaluate whether the use of a

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pesticide is consistent with the FIFRA standard. The timing for any such review(s) is beyond the scope of this analysis.

12. BEAD's interpretation of the "no pest answer" response in EPA's proprietary usage data is flawed and is not an accurate reflection of grower intent, since multiple and sometimes unknown pests are known to drive the need for this technology.

    BEAD RESPONSE: BEAD understands that there can be many reasons that growers decline to respond with a target pest on the surveys used to collect usage data. However, it is notable how a much higher proportion of seed treatment usage, particularly on soybeans, is not associated with any pest, indicating that much of the use is likely to be prophylactic. In comparison to neonicotinoid seed treatments, BEAD notes that the proportion of users reporting no target pest is about an order of magnitude (10 times) lower for all other non-seed treatment insecticide applications made from 2004-2014 (MRD, 2000-2014). Table 1 shows the total treated acreage by crop for insecticidal seed treatments (and the relative proportion of that acreage that lists no target pest) in comparison with the total insecticide treated acreage for all crops and all application types, except seed treatment acres (MRD, 2004-2014). Among crops treated with insecticidal seed treatments, soybeans has the highest proportion of treated acreage for which no target pest is assigned, indicating that a great deal of seed treatment usage on soybeans may be prophylactic in nature. For all other crops, the proportion insecticide treated acreage (excluding seed treatments) not listing a target pest ranged from 0% to 8%, with an average of 4.6%.

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Table 1. Relative Proportions of Insecticide Treated Acreage Reporting 'No Answer' for Target Pest, for Various Seed Treatment Crops vs. For All Insecticide Applications to All Crops (Excluding Seed Treatments), 2004-2014.

Crop	Total Insecticidal Seed Treatment Acreage Treated (000's)	Total Acreage Treated with "No Answer" for Target Insect Pest (000's)	% of Treatments Associated with "No Answer" for Target Insect Pest
Soybeans	~162,091	~83,067	51%
Corn	~636,557	~291,546	46%
Wheat, Spring	~19,503	~6,007	31%
Wheat, Winter	~36,750	~10,781	29%
Sorghum (Milo)	~13,538	~3,377	25%
Cotton	~53,881	~12,810	24%
Sugar Beets	~2,674	~414	15%
Potatoes	~1,633	~207	12%
Sum Total: All Seed Treatment Crops	~926,628	~408,205	44%
	Total Insecticide-Treated Acreage (000's)	Total Acreage Treated with "No Answer" for Target Insect Pest (000's)	% of Treatments Associated with "No Answer" for Target Insect Pest
All Crops, All Insecticide Applications, Excluding Seed Treatments	~1,016,651	~46,626	4.6%

Source: MRD, 2004-2014.

13. BEAD's scope of inquiry was too narrow and BEAD should have discussed the costs and benefits of alternatives.

    BEAD RESPONSE: The assessment, and this response document, both evaluate whether alternatives provided more/less/similar control of pests (benefits) and considers the comparative costs.

II. BEAD'S RESPONSES TO SPECIFIC GROUPS OF COMMENTS, CATEGORIZED BY CONTENT AND/OR SPECIFIC TOPICS

BEAD will herein paraphrase, categorize, and respond to specific comments that are grouped by similarity of content and discussion topics. Not all comments are specifically cited in the responses below. Appendix I provides a list of the comments, by docket reference number, addressed by each of BEAD's responses.

1. The Center for Food Safety (CFS) submitted a coordinated response with other stakeholders (EPA-HQ-OPP-2014-0737-0868) and other non-governmental organizations (NGOs) submissions argue that we have overstated the benefits of soybean seed treatments, that submitted registrant data are flawed, and that EPA should warn growers that seed treatments can negatively impact yield, citing Douglas et al. (2015), etc.

   BEAD RESPONSE: BEAD reviewed CFS's analysis 'Heavy Costs' (Stevens and Jenkins, 2014). Beyond the studies cited in CFS's analysis, BEAD also sought out additional data on yield protection from both the peer-reviewed and non-peer reviewed literature, including the Entomological Society of America's online repository of efficacy trials, Arthropod Management Tests (AMT). Based on analysis of numerous sources, BEAD disagrees with the assertion that the assessment overstated the benefits. BEAD did conclude that, when viewed broadly and on a national scale, pest management benefits of neonicotinoid seed treatments are low to negligible in most cases. When compared to available alternatives, there are scenarios where insurance benefits of seed treatments might have important benefits, particularly in areas with high pressure from soil-borne pests, for example. BEAD sought additional information on the significance of such benefits and agrees with numerous other commenters that neonicotinoid seed treatments on soybeans can provide important benefits in certain pest scenarios.

2. Several commenters cited recent studies indicating a lack of benefits of seed treatments for control of soybean aphids and tri-trophic disruptions, both resulting in the use of foliar insecticides, which pose an additional risk to pollinators.

   BEAD RESPONSE: Information about the ecological risk of insecticide seed treatments and alternatives do not fall within the scope of BEAD's assessment of benefits. The purpose of this assessment is to describe the benefits neonicotinoid seed treatments offer to soybean growers and it will be used, in conjunction with risk assessment information, to inform decisions in the review of the registrations for these active ingredients.

3. Several commenters from the mid-South (including Arkansas, Louisiana, Mississippi, Missouri, and Tennessee) provided information related to the particular pest management needs of the Mississippi Delta growing region, with accompanying citation of a draft meta-analysis of seed treatment yield impacts for mid-south soybeans. [BEAD initiated a phone discussion with one of the authors of this submission in late 2014 to obtain additional information about agronomic practices specific to soybean production in the mid-South.]

BEAD RESPONSE: In analyzing the benefits of seed treatment usage of neonicotinoid insecticides on soybeans, BEAD discussed some of the important regional variation in cropping practices, target pests, and agronomic practices across the United States. This submission from the mid-South, and also accompanying information from other comments (particularly the submission from Buntin et al., EPA-HQ-OPP-2014-0737-0944, which will be discussed in more detail later) have made it clear that BEAD's regional analysis (discussed as 'uncertainties) did not adequately capture the unique pest control challenges encountered in the mid-South United States. Beyond a misunderstanding of the geography of mid-South soybean production (BEAD initially lumped the mid-South in with other Southeastern states such as Georgia, Virginia, and the Carolinas), there were also a number of production assumptions and uncertainties that caused an inherent under-estimation of likely seed treatment benefits for the mid-South.

Of primary concern with regard to seed treatment benefits is the more recent practice of early soybean planting for yield maximization. The author presented evidence of a clear yield effect of earlier planting, whereby earlier planting had a significant impact on soybean yields in this particular region. Such early planting necessitates planting into cooler, wetter soil conditions where seeds and early emerging seedlings are more susceptible to attack from soil pests. Furthermore, due to the increased adoption of no-till and cover-cropping approaches in this region, seeds are being planted into a soil environment that tends to have much higher pest pressure—as compared to soil that is tilled prior to planting. Further discussion with the author indicated that scouting for and identification of particular soil pest damage is exceedingly difficult, particularly at the early planting dates now preferred by growers. There is extensive evidence of widespread damage to untreated seeds that is conferred after planting, but it has proven nearly impossible as of yet to develop scouting methods or predictive models that can anticipate such pest problems prior to a planting decision. Therefore, given the known widespread presence of soil pests (exacerbated by agronomic practices) and the difficulty of scouting for such pests, BEAD concurs that the benefits of a preventative seed treatment are higher in the mid-South, relative to other regions with lower pest pressure, later planting dates, and more varied agronomic practices and that this benefit likely spans the entire mid-South soybean growing region. More details will be discussed in Section IV.

It became clear after communications with one of the authors of this submission, as well as other soybean Extension experts from around the country, that this early-planting situation and particularly some of the cover-cropping practices that exacerbate wireworm and seed maggot pressure are mainly unique to the mid-South United States. While it is difficult to precisely calculate the specific benefits of prophylactic soil pest control under such conditions, BEAD concurs with the authors that from a probabilistic standpoint, the likelihood of problems from soil pests is much higher in this region of production relative to other regions of the U.S. (see Comment #6 in Section I). This information is valuable in providing additional pest risk characterization to the 'uncertainties' identified in BEAD's initial draft.

BEAD would add that since the pest control needs in the mid-South United States are mainly driven by soil pests such as seedcorn maggots and wireworms, the previously identified alternative permethrin seed treatment, if available for use, likely constitutes a viable and effective alternative to neonicotinoid seed treatments for control of these pests.

Finally, BEAD appreciates the submission of a region-specific meta-analysis. BEAD considered this potential benefit, as well as those projected by the conclusions of other meta-analyses that were either submitted or discussed in the comments related to this analysis, and this is discussed further in Section IV.

4. Several commenters discussed the important benefit of preventing transmission of the bean pod mottle virus (BPMV) which is vectored by the bean leaf beetle (BLB). Citations were provided discussing the importance of this factor and it was noted that control of the adult overwintering generation is key to stopping transmission of this virus by providing an early season mitigation of BLB populations. This, can often preclude the need for later foliar treatment of subsequent BLB generations.

   BEAD RESPONSE: BEAD is very appreciative for the submitted information and citations regarding transmission of BPMV by BLB. Available data indicate that losses from BPMV infection, which impact both yield and quality of beans, can be quite significant. BEAD did not previously take BPMV transmission into account when analyzing comparative efficacy of seed treatments vs. foliar spraying for BLB control. While overall control of BLB (both adults and the immature stages from subsequent generations) is not significantly different between foliar sprays and neonicotinoid seed treatments on soybeans, review of the cited and submitted information makes it clear that the most effective way to control spread of BPMV is by controlling the overwintering adult population of BLB adults that feeds on soybean plants soon after crop germination and emergence. Because this overwintering adult population would typically be active in soybean fields immediately after planting, neonicotinoid seed treatments offer particular advantages for BLB control during this period of time, given the systemic movement into the emerging soybean plant, and bioavailability of neonicotinoid residues for the first 3-4 weeks after planting. Also, because wet conditions can often occur in the time period during or immediately after planting, it can be difficult for growers to make foliar applications of insecticides during this important control window. Protecting the emerging soybean seedlings by use of a neonicotinoid seed treatment ensures adequate protection against BLB during this critical control window without the need for the additional expense of applying foliar insecticides. BEAD concurs that the neonicotinoid seed treatments thus provide an important benefit for areas at high risk for infection from BPMV and where overwintering BLB adult populations are expected to be high. BEAD concurs that it is advantageous to utilize neonicotinoid seed treatments in such areas (particularly Iowa and other Midwestern states), based upon established site history, evidence of past BPMV infections nearby, and known presence of significant BLB populations. BEAD has incorporated the potential impact of and importance of BPMV and the associated vector control in a revised impact estimate that will be discussed later in this document. Furthermore, for the revised analysis of impact, BEAD will project alternative costs based upon an additional foliar insecticide spray applied to soybeans to

control overwintering BLB in the Midwest, assuming acreage that currently receives a soybean seed treatment.

III. BEAD'S RESPONSES TO SPECIFIC COMMENTS

BEAD will herein respond to specific comments that discuss topics or offer specific content or cited data that cannot be broadly or narrowly grouped, with inclusion of verbatim comment content, as needed. Specific comment numbers from the public docket are provided for reference so that readers may reference the original submitted comments via regulations.gov.

1. A group comment letter (Bailey et al. EPA-HQ-OPP-2014-0737-0331) was submitted from leading land-grant university (LGU) researchers and extension experts who have a specialty in pest management problems of soybeans in the Northeastern and Northern/Midwestern U.S., representing the following states: Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, Pennsylvania, South Dakota, Wisconsin.

   Some key excerpts from the comments:
   a. "Given our collective research and extension experience in soybean entomology, we confidently state that widespread, prophylactic use of neonicotinoid seed treatments is unnecessary and ill-advised in our region. There are often temporal and spatial inconsistencies between deployment of seed treatments and target pests; farmers thus gain little pest management or economic benefit from widespread, prophylactic use of these treatments. This conclusion is borne out by multiple years of research in the northern soybean producing region, which reinforces the recent EPA report. However, neonicotinoid seed treatments on soybean are valuable for managing certain insect pests in targeted, high-risk situations."
   b. "In the northern region, most of the below-ground insect pests (e.g., seedcorn maggot, white grubs, and wireworms) targeted by neonicotinoid seed treatments do not reach economically-damaging levels in the majority of fields, and soybean producers benefit from this relative scarcity of early season pests."
   c. "There is a temporal mismatch between the typical timing of soybean aphid colonization (often late vegetative into bloom stages) and the short-lived window of insecticidal activity in plants. In addition, early-season aphid infestations can be suppressed by a suite of predators and parasitoids. Scouting and threshold-based foliar insecticide applications are the most effective and economical approach for soybean aphid management."
   d. "They [seed treatments] increase the risk of resistance through the widespread, repeated use of a single insecticide class. This is an understudied issue for neonicotinoid seed treatments that deserves more attention."
   e. "Targeted use of neonicotinoid seed treatments is advised for fields or parts of fields at high risk of economically-significant infestation of seed or seed-feeding pests, particularly for those soil-borne pests with no rescue treatments. In our experience, however, these situations are uncommon. Furthermore, risk of infestation by these

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pests is usually predictable based on field history and conditions." A list of situations is provided where seed treatment usage is most likely warranted.

f. Three points of emphasis regarding seed treatment use on soybeans:
    a. "Early-season economic infestations of insects in soybean are uncommon in most fields across the northern region."
    b. "Soybean is an extremely resilient crop, tolerating early-season stand losses and defoliation from insects without suffering economic loss."
    c. "When pest problems do occur, management should be based on an integrated approach including host plant resistance, cultural control, conservation of natural enemies, scouting, and threshold-based insecticide applications."

g. "The current widespread, prophylactic use of neonicotinoid seed treatments in soybeans is currently unjustified."

BEAD RESPONSE: BEAD appreciates the insights into our benefits analysis, particularly noting the consensus opinion that many of the key soil-dwelling pests of importance to soybean production occur infrequently in the regions of soybean production. This observation is of key importance for informing uncertainties about regional variability in the benefits of neonicotinoid seed treatments for soybeans. BEAD also agrees that in areas of known pest pressure from the soil pest complex, that neonicotinoids are very effective materials for control of these pests and for prevention of yield losses. BEAD concurs with the statements about past field and site history offering insights, (albeit with limited predictive power) for the relative likelihood risk of soil pest pressure for soybean growers. This finding should inform not only specific pest management decisions by growers, but also inform interpretation of national-scale meta-analyses of yield protection data. It is logical and intuitive to understand that the relative likelihood of yield benefits from seed treatments will be higher in areas where soil pest pressure is more likely to be significant. BEAD also appreciates the expert insights into the relative importance of seed treatments for soybean aphids, which as stated by the commenters, most often occur at times that do not match up well with the period of highest bioactivity in soybeans. BEAD appreciates the concerns expressed regarding widespread selection pressure due to area-wide prophylactic use and agrees that more study on this particular issue is warranted. BEAD acknowledges and agrees with the statement on the relative resilience of soybeans as a crop. It is well-established that soybeans can withstand substantial levels of early season defoliation without significant impacts on yield. However, in instances where sites or regions have a history of infection with BPMV and a high likelihood of early-season BLB infestation, use of seed treatments is likely very important for mitigating the spread of BPMV by controlling the overwintering population of BLB adults, as has been pointed out by other commenters and industry experts.

2. A group comment letter (Buntin et al. EPA-HQ-OPP-2014-0737-0944) was submitted from leading land-grant university (LGU) researchers and extension experts who have a specialty in pest management problems of soybeans in the Southeastern U.S., representing the following states: Alabama (coastal plain), Georgia, North Carolina, South Carolina, Virginia.

Some key excerpts from the comments:

a. "We concur with the EPA-BEAD conclusion that neonicotinoid seed treatments do not provide clear or consistent economic benefits across the majority of southeastern soybean production systems . . . . The scientific consensus in the southeastern states (VA, NC, SC, GA, AL coastal plain) is contradictory to the mid-southern states (northern AL, AR, LA, KY, MS, OK, TN, TX, and MO boothill). This is a significant departure from the assessment, which broadly groups every state from Virginia to Texas into a group titled "southeast."
b. "While we acknowledge that responses in several mid-southern states (specifically LA, MS, and TN), a majority of the southeastern land-grant university entomologists have not shown such a finding in their respective geographic region.
c. " . . growers in southeastern states rarely encounter treatable populations of bean leaf beetle, soybean aphid, or three-cornered alfalfa hopper in the first three to four weeks from planting when seed treatments are active. Reasons for differences between regions are likely because growers in mid-southern states typically start planting in March, whereas the majority of soybeans in the Southeast are planted between 15 May and 30 June . . . where this early (planting) system is neither possible nor profitable.
d. "Southeastern land-grant university soybean entomologists are concerned that unilateral prophylactic use of neonicotinoid seed treatments in southeastern soybean production will exacerbate currently evolving insecticide resistance. Southeastern growers already utilize neonicotinoid seed treatments on every acre of corn and cotton.
e. " . . . previous research shows that these (seed) treatments may adversely affect non-target organisms. Many of our growers realize that beneficial organisms (predators and parasitoids) provide appreciable caterpillar and aphid suppression that will not be present when insecticides are applied. There is mounting evidence that neonicotinoids negatively affect natural enemy life history."
f. "Although we do not support prophylactic neonicotinoid usage patterns in soybean, we do favor continued labelling of neonicotinoid seed treatments on soybean. Seed treatments need to remain in the soybean pest management toolbox and, indeed can be an appropriate solution in cases where significant risk is demonstrated . . . While uncommon, there are specific conditions, areas, and situations where neonicotinoid seed treatments are important tools in an acceptable integrated pest management program."

BEAD RESPONSE: BEAD appreciates the clarification and correction regarding the geographic delineations for discussing the most common pests and production practices in the Southern U.S. BEAD has revised its assumptions about "southeastern" production areas (and the subsequent identification of relative uncertainties). BEAD acknowledges that the mid-South states (i.e., Mississippi Delta region) should be recognized as distinct from the production region further east that encompasses Virginia, North Carolina, South Carolina, Georgia, Alabama, etc. Based upon earlier comments and discussions with researchers from the mid-South, BEAD now has a better understanding about that region's particular practices of early planting, agronomic conditions, and overall pest pressure from soil pests. BEAD appreciates the nuanced discussion of how production in

the southeast does not adopt similar early planting practices and how pest pressure from soil pests, BLB, and alfalfa hoppers is relatively lower in comparison. Similar to the regional information from the Midwestern commenters, this is very useful in informing uncertainties about regional pest differences as well as the results of national-level meta-analyses. It is logical and intuitive to understand that the relative likelihood of yield benefits from seed treatments will be higher in areas where soil pest pressure is more likely to be significant. BEAD also agrees that in areas of known pest pressure from the soil pest complex, that neonicotinoids are very effective materials for control of these pests and for prevention of yield losses.

3. Coordinated comments from USDA-ARS were submitted by Ann Bartuska, USDA Deputy Under-Secretary for Research, Education, and Economics (EPA-HQ-OPP-0737-0943).

   Some key excerpts from the comments:

   a. "there is no simple answer to the question of whether neonicotinoid seed treatments have value as a prophylactic treatment in soybeans, and most other crops for that matter. It is a complicated situation with many facets and important nuances that must be considered."
   b. "Prophylactic use of an insect management tool is not necessarily a bad idea, and such a strategy can play a central role in an IPM program depending on the context—host plant resistance is the classic example, because it eliminates or reduces the need for in-season rescue treatments . . . From an IPM point of view, the value to a grower should outweigh this cost, at least when averaged over years, for use to be economically justified. Neonicotinoid seed applications are purported to provide early-season, broad-spectrum pest control, enhancing plant vigor and crop yield potential."
   c. "Pest complexes and cropping practices vary widely across the U.S. soybean growing regions. The abundance and diversity of different pest populations also vary, even within different production regions . . . Using neonicotinoid seed treatments for protection against a certain pest in one region of the country may be justified much of the time, whereas prophylactic protection against the same pest in another part of the country may be seldom warranted. For example, soybean growers in the southern. U.S. face a much more diverse and serious threat from insect pests than growers in the Midwest, and the value of protection afforded by prophylactic insecticides likely will vary accordingly."
   d. "Information on pest pressure by scouting is often the best way to assess need for control, but for many of the pests targeted by neonicotinoid seed treatments, especially below-ground insects, scouting is impractical or there is no viable rescue treatment available once a real-time problem is detected. In these cases prophylactic seed treatments may be warranted if predicted risk of damage is high enough."
   e. " . . .scenarios putting fields at risk of serious secondary pest pressure are not uniformly distributed in space or time, but neither are they rare. . . . A one-size-fits-all assessment of value of neonicotinoid seed treatments is not possible except from a very high vantage point that deals with overall averages. . . . and overall averages are

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not always the best tool for determining the best course of action on the scale of individual farms."

f. "We caution that the very widespread use of neonicotinoid seed treatments on soybeans and other crops cannot be taken as direct evidence of their value to growers, because in most cases untreated seed of the varieties desired by a grower is not available for purchase. . . . We also caution against assuming that non-use of seed treatments will automatically necessitate replacement by some other form of protection against the target pests. The need for any pest control approach depends on pest pressure or, in many cases, the risk of pest pressure, for which national or even regional averages are not sufficiently informative."

g. "USDA-ARS scientists and others are actively engaged in synthesizing what is already known that can be of potential use in assessing the value of neonicotinoid seed treatments for major U.S. crops, and in conducting meta-analyses of relevant published and unpublished data. The results should reveal the most serious knowledge gaps that we (the scientific community) can most profitably address in future research."

BEAD Response: BEAD appreciates USDA-ARS's comments and strongly agrees that a regional analysis would provide a fuller understanding of the benefits of soybean neonicotinoid seed treatments. BEAD acknowledges that some of the specific regional issues identified in the above comment were not adequately understood or addressed in BEAD's assessment. Based upon other submitted comments, particularly Comment #3 in Section II, BEAD has a better understanding of the unique pest control challenges faced by growers in the mid-South, and a more nuanced understanding of the relative likelihood of benefits on a region-by-region basis, particularly for soil-dwelling pests.

BEAD agrees that for soil-dwelling pests, scouting is difficult and that preventative treatments may often be warranted for areas with known instances of damage or a history of pest pressure (see Comment I.6 and III.3). BEAD also agrees with USDA's comment that usage in and of itself does not constitute evidence of any specific benefit, and shares the expressed concerns about the availability of untreated seed to growers (see Comment I.4 and III.5). This comment, in particular, runs counter to claims by other commenters and registrants and indicates that there is some controversy among stakeholders as to the actual/practical availability of untreated seed for growers.

4. Coordinated comments from USDA's Office of the Chief Economist (OCE) were submitted by Robert Johansson, USDA Acting Chief Economist (EPA-HQ-OPP-0737-0942).

Some key excerpts from the comments:

a. "As a whole, USDA disagrees with [BEAD's] assessment. We believe that pest management strategies are made in consideration of pest pressures, climate, landscape, and numerous other factors. Growers should have the ability to use the best tools available to manage pests that include choices in seed treatment and pest management tactics. Each knows best what works for his or her individual situation."

b. " . . . it is unlikely that most farmers would be purchasing seed treatments if there was no value to them. For example, extension agents at the University of Mississippi [*sic*]point out that adoption of neonicotinoid seed treatments for soybeans in MS has risen from 2 percent in 2007 to 90 percent today. That pace is more rapid than adoption of herbicide resistant soybeans and has been driven by the value MS soybean producers place on the protections afforded by neonicotinoid seed treatments." "In general, USDA would suggest that farmers are efficient and would not use management practices that did not generate expected benefits that were at least as great as the cost of that management practice . . . In this case, employing a menu of pesticide practices that includes seed treatments is balanced against the costs of using those practices." "USDA agrees that in some situations different pesticide methods may be equally effective as seed treatments in a given year. And it is likely that in some soybean growing regions, there are more cost-effective pest management treatments. However in other situations or regions, environmental conditions would likely favor the efficacy of seed treatments over those afforded by foliar spraying."
c. "EPA has had to make several broad generalizations and to rely on scarce and limited data that are not public. For example, EPA assumes that foliar spraying of pesticides is done by all producers who are purchasing seed treatments, that such spraying does not incur additional costs in management or equipment purchases, and that such spraying can address the same pests over the same time window as seed treatments.
d. "EPA did not consider any potential environmental consequences of foliar spraying . . . . . The EPA analysis assumes that foliar spraying is environmentally preferable to using seed treatments." "Environmental or ecological consequences of neonicotinoids may not be as great as other traditional insect control, especially with regard to unintended mortality of beneficial insects since, in soybeans, it does not persist to the period when most beneficial insects are most active."
e. "EPA's conclusions are not supported by complete data nor analysis", citing labor/management savings, effectiveness of seed treatments in challenging weather conditions where foliar sprays are not possible, control of soil pests, additional regulatory expenses by landowners ("such as costs to revise pesticide permit applications, or costs to submit new applications for foliar spraying"), year by year benefits of seed treatment via rotation of multiple crops. OCE's proposed sensitivity analysis indicates "EPA's calculations could be understated by more than a factor of 10 for soybean producers in certain regions."
f. "USDA is disappointed that EPA published this report in such a preliminary format without offering USDA an opportunity to help EPA reframe their analysis and correct the misrepresentation of economic costs and benefits that underlie this report . . . As such, it is inappropriate to draw conclusions about the entirety of soybean production across regions of the United States under different environmental conditions by simply looking at national averages over several years."
g. " . . yield enhancement is not the only consideration for using neonicotinoids in crop production, including in soybeans. Those insecticides may have benefits in soybeans to help produce seed without mottling by reducing virus transmission by beetles, especially around edges of fields. Seed producers get 'docked' for mottled seed."
h. "USDA suggests that EPA revise their study to evaluate the full costs and benefits of neonicotinoid seed treatments in all crops and regions. Furthermore, because EPA

has relied on data currently unavailable to the public, USDA requests that EPA include more survey results from the recently released reports that indicate that farmers are using neonicotinoid seed treatments for a variety of reasons."

i. Additional Specific Comments:
    a. "USDA suggests EPA reframe their analysis to consider the full costs or benefits of neonicotinoid seed treatments as it would typically do under its FIFRA requirements.
    b. The potential change in use for neonicotinoid seed treatments assumed in EPA's analysis is economically significant.
    c. The report does not consider the environmental benefits of neonicotinoid seed treatments for soybeans.
    d. Preventative seed treatments are likely to be more or less effective under certain conditions and regions.
    e. Seed treatments minimize the management and labor investment required for scouting and foliar spraying.
    f. EPA's use of limited data to support their analysis is unfortunate, when they were aware that several other studies on this topic would be released at roughly the same time. Those additional data could have been used to augment the limited data cited by EPA in their report.
    g. EPA's Table 4 should show sensitivity analysis as it is standard practice for cost-benefit analysis.

BEAD RESPONSE: BEAD appreciates USDA's Office of the Chief Economist (OCE) comments. BEAD agrees that growers need to make use of multiple tactics and BEAD reiterates that this analysis is focused on benefits of neonicotinoid seed treatments on soybeans and does not constitute a risk assessment or risk management proposal. BEAD agrees that widespread use of a pesticide can be indicative of benefits to the use of the pesticide (or application method). However, widespread use is not necessarily correlated with the magnitude of benefits on a per-acre or per-farm basis. Moreover, in the case of seed treatments, farmers may not have complete choice in the seed treatment package that is used on certain varieties of seed. BEAD concurs that its original assumptions about foliar spraying and tank-mixing were incomplete and has revised its new impact estimates accordingly to account for the costs of additional passes over fields. BEAD concedes that its benefit estimates focus on economic benefits to growers, it does not include non-monetary advantages, such as convenience of use, etc. Such considerations are generally beyond the scope of an analysis of the benefits of the use of a pesticide. BEAD notes that the publication of its draft assessment has elicited numerous comments and brought about valuable input from additional stakeholders that has helped BEAD to refine its estimates. This is precisely the point of a public comment process and BEAD appreciates the input it has received. With regard to the relative risks associated with alternative insecticides, please refer to Comment I.3.

BEAD acknowledges the importance of neonicotinoid insecticide seed treatments for the control of BLB and mitigation of BPMV on soybeans and has revised its benefit estimates accordingly (See Section IV) to incorporate additional data and input from

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registrants and other commenters. Further, EPA has revised estimates with regional considerations for the mid-South and Midwestern U.S.

5. Comments from Phillip Miller, Ph.D., Monsanto, commercial seed producer and seller of Acceleron® seed treatment products for soybeans, which include neonicotinoid insecticides and other crop protection products (EPA-HQ-OPP-2014-0737-0348).

   Some key excerpts from the comments:

   a. Neonicotinoid seed treatments allow flexibility in planting dates and reducing planting rates, and a 1-3 bushel/acre yield advantage, particularly for early planted soybeans. Gaspar et al. (2014) was cited in support of this point.
   b. "it would be helpful for EPA to provide more in depth analysis of the regional differences in soybean pests, with pailicular attention paid to the mid-south region (Alabama, Arkansas, Louisiana, Mississippi, North Carolina, Tennessee and Virginia)."
   c. Monsanto claims neonicotinoid seed treatment use has been increasing in this region in recent years.
   d. A meta-analysis of data derived from all research publications referenced in the Agency's assessment was also suggested, to provide a "more reliable understanding" of the benefits these seed treatments deliver to growers.
   e. Monsanto asked to review the data cited in the assessment as coming from the North Central IPM Center and Douglas et al. (2014).

   BEAD RESPONSE: BEAD appreciates Monsanto's comments and strongly agrees that a regional analysis would provide a fuller understanding of the benefits of soybean neonicotinoid seed treatments; see Section IV. BEAD acknowledges that some of the specific regional issues identified in the above comment were not adequately understood or addressed in BEAD's assessment. Based upon earlier comments and expert input from researchers in the mid-South as well as other regions of the country, BEAD has a better understanding of the unique pest control challenges faced by growers in the mid-South, and a more nuanced understanding of the relative likelihood of benefits on a region-by-region basis, particularly for soil-dwelling pests. BEAD also concurs with the comment that neonicotinoid seed treatment usage on soybeans has been increasing in this region in recent years, as indicated by pesticide use data (MRD, 2003-2013).

   Regarding the Gaspar et al. (2014) submission, BEAD refers to the comment responses for Comment III.6.

   With regard to data sharing, the Douglas et al. data are now publically available in a peer-reviewed publication (Douglas et al., 2015). The North Central IPM center gathered information from regional experts but did not provide BEAD with raw data, just a summary of responses.

6. Dr. Adam Gaspar, a scientist in the Department of Agronomy at the University of Wisconsin in Madison, submitted a short comment and provided three of his scientific publications to support his statements. (EPA-HQ-OPP-2014-0737-0349).

   Some key excerpts from the comments:

   a. "My concern … is with the general sweeping statement offered in the first line of the conclusion that reads "This analysis provides evidence that U.S. soybean growers derive limited to no benefit from neonicotinoid seed treatments in most instances". … My published research from the state of Wisconsin… suggests that there is evidence of efficacy based on increased stand counts over the untreated check and fungicide only checks with the use of some of the neonicotinoid insecticides."
   b. "Furthermore there are instances when growers receive a positive return on investment and reduced economic risk when some (not all) of the neonicotinoid insecticides are used."
   c. "To be clear I am not suggesting that I recommend that [every] acre of soybean in the United States or WI for that matter receive a neonicotinoid insecticide, however I also do not want to see this class of chemistry banned or over regulated to the point that soybean growers do not have the option based on localized pest issues or seasonal production challenges."
   d. Three research papers were submitted: Gaspar et al. (2014a), Gaspar et al. (2015), Esker and Conley (2012).

   BEAD RESPONSE: BEAD appreciates the submitted comments from Dr. Gaspar along with three notable papers germane to the probability of grower benefits from use of neonicotinoid seed treatments on soybeans. BEAD addresses the concern regarding national-level estimates on numerous occasions here and in the concluding sections. BEAD concurs that it would not be desirable for preventative neonicotinoid seed treatment usage to be adopted on all soybean acreage in the U.S. or any one state, and further concurs that there are instances where seed treatments on soybeans deliver significant benefits to growers, based upon control of pests that are present in fields. BEAD emphasizes that seed treatment efficacy for target pest control is well-demonstrated and widely supported by available evidence.

   BEAD staff reviewed the articles provided by Dr. Gaspar, as well as some of the related extension advice available at the Wisconsin Soybean Extension Program website (see [HYPERLINK "http://coolbean.info/soybean_research/soybean_research.php"]).

   The research cited by Dr. Gaspar involved comparisons of seed treatments including different types of pesticides and neonicotinoid insecticides, mainly in terms of the effects on soybean plant stand density and yields. The research also evaluated the impact of various such seed treatments on crop profitability with both typical and reduced rates of seeding. All trials were conducted within one state (Wisconsin), and included many locations, multiple years, a range of pest species and population pest pressures, as well as different climate conditions. Aside from the tested seed treatments, the researchers used in-season pest management recommendations provided by the University of Wisconsin.

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The insect pests involved were the soybean aphid, the bean leaf beetle, and/or the seedcorn maggot (species composition varied, depending on year and location). In one study (Gaspar et al., 2014a), several combinations of pesticides were tested, including three fungicides, a nematicide, and three separately utilized neonicotinoids (clothianidin, imidacloprid, and thiamethoxam). There were no insecticide-only seed treatments—each was combined either with a fungicide (one of three different AIs) or the nematicide. In another study (Gaspar et al., 2015), treatments included (1) two fungicides (used alone and in combination) and (2) a combination of thiamethoxam and one of the fungicides. These treatments were applied along with different seeding rates in several locations with varying pest pressures within Wisconsin.

Results of this research suggested that there are unpredictably variable, but sometimes positive effects of including a neonicotinoid seed treatment in the planting regime for Wisconsin soybeans. In addition, at reduced seeding rates only the thiamethoxam plus fungicide treatment ("CruiserMaxx") increased yield and profits. In addition, to paraphrase the abstract from Gaspar et al. (2014b): plant stands were consistently increased when any neonicotinoid was added to either a fungicide or a fungicide plus nematicide combination, but yield increases were variable across years and locations. Seed treatments only increased yields over the untreated control in one year (2013). This indicates that yield increases due to these treatments are dependent on other unpredictable factors. Another aspect to the results was that imidacloprid was generally less effective in increasing yield, as compared to either thiamethoxam or clothianidin.

Taken together, these results suggest that the addition of a neonicotinoid seed treatment is sometimes helpful (in terms of increasing yield and, if thiamethoxam is used, doing so even with reduced seeding rates) under certain growing conditions. Unfortunately, there seems to be no way of reliably concluding from this work exactly what these conditions are. It seems prudent to conclude that this work supports the inclusion of certain neonicotinoids (thiamethoxam and clothianidin) where pressure from the insect pests evaluated (the soybean aphid, the seedcorn maggot, and/or the bean leaf beetle) is expected or reliably known to be high every season. Other issues exist in these studies – *e.g.*, they were conducted in only one part of the Midwest, and did not compare neonicotinoid seed treatments with either foliar alternatives or non-neonicotinoid seed or soil treatment options.

Generally speaking, the probabilistic approached presented by Gaspar et al. (2015) and Esker and Conley (2012) shows variability in the yield response for soybeans grown in Wisconsin. Further, the conclusion projects that the probability of benefits is highly correlated with both the baseline yield for a given site, and also with the soybean commodity price, whereby the likelihood of a seed treatment investment providing a break-even return are much more likely under conditions of high soybean prices and high baseline yields, and the likelihood of returns decreases as these variables decrease. However, for sites with known pest pressure, BEAD concurs with the general conclusion that soybean seed treatments are very effective at protecting seeds from soil-dwelling pests and that yield is protected under conditions of high pest pressure. BEAD also concurs that taking this efficacy into account can allow for high soybean yields using

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lower planting densities that lower the costs per acre for growers. BEAD recognizes that along with use of alternative control tactics (i.e., permethrin seed treatment) or cultural practices (such as tillage), it is feasible to mitigate some pest damage (and yield loss) by increasing seeding densities in the absence of available neonicotinoid seed treatments. Since seed treatments protect the seeds and preclude the need for higher seeding rates, it is possible to achieve a desired yield at a lower seeding rate. BEAD projects that the benefit of over-seeding as a yield protection tactic likely falls somewhere below BEAD's revised (see Section IV) upper-bound impact scenario for the mid-South, which addresses the yield losses associated with soil pests in the absence of an effective seed treatment.

7. Comments from Lisa Nichols, Loveland Products, who is a registrant and manufacturer of fertilizers, adjuvants, seed treatments, and other crop protection products (EPA-HQ-OPP-2014-0737-0777).

   Some key excerpts and summaries from the comments:

   a. Key elements were missing from BEAD's analysis:
      i. "Use and review of additional registrant and seed company data, along with data and input from farmers, agronomists, plant pathologists, agricultural economists, and food value chain experts."
      ii. "Examination of the benefits of seed treatments as a mode of application;" including early planting, disease prevention and reduction, compatibility with no-till practices, less exposure to non-targets, and Ag handler safety.
      iii. A more "inclusive assessment of insect pressure on soybeans" with specific regard to early season pests and disease.
      iv. Potential for resistance "resulting from the loss of neonicotinoid seed treatments as a tool."
   b. "Growers believe in seed treatments, they have for a long time. A grower would simply not pay the up-charge on seed treatments if they did not see the value in doing so . . . . If growers who utilize, and rely on the use neonicotinoids [*sic*] could vote on this issue, there would be no question that they would vote to continue to have access to this important technology."
   c. "Neonicotinoid seed treatments have generated a new equipment sector." This has created jobs in seed treatment manufacturing, infrastructure, maintenance, and these "technologies (were) derived from the use of neonicotinoids."
   d. "Internal" trials indicate that "Insecticides year over year show on average an 87% increase in yield over a fungicide only treated seed. . . . Data and statistics support the yield, and other benefits of neonicotinoid use on soybeans."
   e. Losing neonicotinoids "will undoubtedly promote, require, and motivate the use of foliar and in-furrow application of insecticides—at a much higher application rate."

f. "The (EU) ban has already proven what many agronomists warned against. Farmers in Europe have seen a decline in metric tons per hectare and an increase in insect pressure."
g. Resistance issues were highlighted.

BEAD RESPONSE: With regard to data sources, BEAD reiterates that in evaluating yield protection/effectiveness, BEAD relies upon studies that are deemed suitable for publication in either the peer-reviewed public literature, or in the Entomological Society of America's technically reviewed journal Arthropod Management Tests. Because BEAD has not seen the commenter's "internal" data from research trials on neonicotinoid seed treatments, we have no way to evaluate the specific claims of 87% yield impact, for example. Further, because a myriad of uncontrolled variables can affect pest densities and product performance on a farm by farm or trial by trial basis, BEAD realizes that there are cases where any specific pest control measure can out-perform or under-perform compared to results observed in controlled and replicated studies. Realizing that the available published data (which measures efficacy all the way to soybean yield) was relatively limited, BEAD worked with the North Central IPM Center (with assistance from USDA) to collect additional information that was not published in available literature from the leading national experts in soybean entomology.

BEAD's analysis was centered upon neonicotinoid insecticide seed treatments, and thus discussions of other seed treatment active ingredients (such as fungicides, for example) and associated claims regarding disease prevention are not germane to this particular analysis. Additionally, to reiterate, BEAD's memo was strictly an analysis of the benefits for growers and not a risk assessment or regulatory decision document. As such, comparison of risks to workers is not within the scope of the analysis. BEAD's benefit analysis, and the additional information considered in this response to comments memorandum will be used in the course of registration review to balance risks and benefits of neonicotinoid seed treatments if/when any future risk management or risk mitigation decisions are made.

With specific regard to early planting and compatibility with no-till practices, BEAD agrees that some additional consideration of these benefits is warranted, as pointed out specifically by the commenters representing soybean production areas in the mid-South United States. BEAD concurs that there are instances, particularly in this region, where cropping practices (including use of no-till and cover-cropping, for example) can lead to high levels of soil insect infestation and thus increase the relative benefits of soybean seed treatments applied preventatively.

With regard to grower selection of pest management tactics, BEAD refers to comment I.4. While it is true that many soybean seed treatments are applied downstream from the original seed packager (in contrast to corn, for example), EPA has been made aware of situations where the difficulty in de-coupling seed treatment options has made it onerous for some growers to obtain untreated seed. If widespread issues indeed exist with being able to obtain untreated seed, this situation would belie the notion that growers are making independent, site-specific pest management choices and would thus contradict

any correlations between the actual need/demand for seed treatments with their actual rates of adoption.

BEAD also reiterates that this benefit assessment makes no recommendation for any regulatory action regarding neonicotinoid seed treatments. BEAD agrees that whenever possible, it is preferable for growers to have as many varied pest control options available as possible. With specific regard to resistance, BEAD concurs that the ability to rotate chemistry and have multiple insecticide modes of action available for use is key in the ability to manage insecticide resistance, but would also note that widespread, prophylactic usage of one mode-of-action (i.e., neonicotinoid seed treatments) also causes concern for development of resistance.

BEAD appreciates the information regarding the outcome of neonicotinoid bans in the E.U. OPP is aware that this particular case in the E.U. should provide valuable information for U.S. regulators regarding the importance of neonicotinoid seed treatments on a variety of crops and also provide some measure of the importance of these chemicals and the potential impact to growers when neonicotinoids are not available. OPP plans to continue to closely monitor the situation in the E.U.

8. Comments from Keri Carstens, Ph.D., from DuPont, who purchases neonicotinoid seed treatments for application to its Pioneer brand corn and soybean seeds. DuPont is also a pesticide registrant and manufacturer of a number of insecticides and other crop protection products (EPA-HQ-OPP-2014-0737-0862). Dr. Carstens also met with OPP in person to discuss DuPont's proprietary meta-analysis of seed treatment benefits for corn and soybeans, which is discussed below.

   Some key excerpts and summaries from the comments:

   a. "DuPont has generated more than ten years of data directly evaluating neonicotinoid seed treatment product performance across critical corn and soybean growing regions in the U.S . . . designed to assess yield impact, as well as other important agronomic characteristics." These studies show:
      i. "that neonicotinoid seed treatments provide a yield advantage 80% of the time, with an average increase of 1.6 bu/acre across average soybean growing conditions" based upon analysis of 59 replicated research locations.
      ii. "In conditions with heavier insect pest pressure, DuPont data show neonicotinoid seed treatments deliver a yield advantage 83% of the time, with a mean of 2.7 bu/acre yield advantage." This subset appears to focus on areas of high bean leaf beetle pressure, based on analysis of 12 replicated research locations.
      iii. "USDA yield trend data show that yield increases of 0.5 bu/acre can be significant for soybean production." DuPont's studies were prospectively analyzed for adequate sample size, statistical rigor, etc. and designed to detect differences at this level.

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b. In particular, early season defoliation by bean leaf beetle (BLB) is problematic and this insect vectors detrimental diseases.
c. While raw data were not provided, a summary appendix presented the various yield and agronomic trait differences by treatment under the 2 study scenarios, along with a basic description of methodology. Of note, the threshold for statistical significance was set at $P < 0.1$, rather than $P < 0.05$.

BEAD RESPONSE: BEAD appreciates this data submission, as it provides information that helps inform uncertainties identified in BEAD's original benefits assessment with regard to the 'insurance' benefit of preventative seed treatment usage on soybeans. DuPont's probabilistic approach appears to utilize similar comments and methodology to the work cited by Gaspar et al., and attempts to quantify both the magnitude of expected benefits and the likelihood of growers to see these benefits. BEAD also acknowledges that there is a large amount of uncontrolled variability in play when any meta-analysis seeks to merge data from different parts of the country with different soybean varieties, different soil conditions, different agronomic practices, etc.

Without access to raw data or a more detailed discussion of site selection criteria and statistical methodology, BEAD cannot come to any specific conclusion regarding this data set. However, BEAD would note that DuPont's conclusions do provide a counterpoint to BEAD's original assertion that much of the existing neonicotinoid seed treatment provides 'no benefit' in terms of yield, particularly for areas of the country where the extent of actual pest pressure is unknown. It is unclear from this analysis how much the final yield benefit estimates are weighted by sampling from areas with high insect pressure. BEAD notes that this variability might be masked somewhat by the choice of setting $p < 0.1$ as a threshold for statistical significance rather than the more commonly accepted threshold of $p < 0.05$.

Given that BEAD's original benefits analysis was criticized for lacking adequate characterization of regional variability, it stands to reason that the same criticism likely applies to DuPont's meta-analysis approach which seeks to define an overall national average for soybean benefits. Given likely variability in numerous factors affecting yield, it may have been preferable to conduct smaller, region-specific meta-analyses for soybeans to distinguish which regions most significantly benefit from seed treatment usage (presumably the areas of the country with highest early-season pest pressure, for example).

BEAD is appreciative of the specific mention of the vectoring of bean pod mottle virus (BPMV) by the bean leaf beetle. This comment falls in line with similar comments received from extension experts regarding the importance of this disease and the importance of controlling the early-season overwintering generation of BLB that both vectors this disease, and also causes early season defoliation damage to newly emerged soybean seedlings. BEAD concurs that this particular benefit was underestimated in the original benefit assessment. BEAD also concurs with the general implication that the likelihood (and magnitude) of benefits for neonicotinoid seed treatment is probably more clear for sites with higher BLB pressure, as DuPont's data showed when a subset of 'high

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pressure' BLB fields were analyzed. It stands to reason that the probability of a specific measureable yield benefit from seed treatment usage will be higher for sites with a known history of pest pressure from pests that would be controlled with neonicotinoid seed treatments during the early part of the growing season. Despite uncertainty regarding the results of this and other cited meta-analyses that have been mentioned by other commenters, BEAD considered how projected yield impacts would affect revenue for soybean growers. This will be discussed in more detail in Section IV.

9. Comments were submitted by Carrol Moseley, Ph.D., from Syngenta. Syngenta is a pesticide registrant and is producer of numerous insecticide products, including thiamethoxam. (EPA-HQ-OPP-2014-0737-0901)

   Some key excerpts and summaries from the comments:

   1. Syngenta cited the pest protection from early season insect damage, particularly for early soybean plantings, that can be obtained from neonicotinoid seed treatments, as a compelling benefit. This comment also cited a 1-3 bushel/acre yield benefit, and also cited the importance of seed treatments in crops grown in southern states.
   2. Regarding pests, the comment highlighted the effectiveness of seed treatments against soil dwelling insects (seedcorn maggots, wireworms, etc.), the bean leaf beetle, and the soybean aphid. In discussing the soybean aphid, Syngenta disputed the Agency's conclusion that seed treatments are unnecessary for control. They cited selected extension and research publications that suggest neonicotinoid seed treatments be used for late-planted or double-cropped soybeans in the North Central region, and that at least one aphid predator, the multi-colored Asian ladybeetle, is better able to keep aphid populations in check when seed treatments are used.
   3. They also cited results (summarized) of their own field trials that showed that in some tests, neonicotinoid seed treatments delayed aphid populations from reaching economic threshold by 1-3 weeks and that in many trials foliar insecticide applications for aphid control were unnecessary when seed treatments were used.
   4. They also cited the work done by AgInformatics on the economic benefits of neonicotinoid seed treatments in soybeans.
   5. Finally, Syngenta also mentioned that insect resistance management is more feasible with such treatments because repeated use of products with the same mode of action is unnecessary.

   BEAD response: BEAD appreciates Syngenta's comments. With regard to the discussions on soybean aphid, BEAD notes that bioactivity in soybeans may not align well with typical population dynamics in the field. However, there are instances where control of an early season infestation via seed treatment might help to prevent or delay the needs for a subsequent foliar insecticide treatment targeting aphids, if the population remains below threshold levels.

   With regard to meta-analysis, without access to raw data or a more detailed discussion of site selection criteria and statistical methodology, BEAD cannot come to any specific

conclusion regarding this data set that was mentioned in the comments. It is unclear from this analysis, for example, how much the final yield benefit estimates are weighted by sampling from areas with high insect pressure. As has been stated in response to other meta-analysis submissions, given that BEAD's original benefits analysis was criticized for lacking adequate characterization of regional variability, it stands to reason that the same criticism likely applies to Syngenta's meta-analysis approach, which seeks to define an overall national average for soybean benefits. However, BEAD does appreciate that a regionally balanced and standardized approach for meta-analysis approach would be very useful for estimating impacts from neonicotinoid seed treatments on soybeans. BEAD is not in a position to either concur or object to the results of Syngenta's approach at this time and is interested in getting more information about how such analytical approaches might better inform BEAD's benefit analyses.

With regard to resistance, BEAD concurs that having an adequate number of available modes of action for rotation is important for the goals of resistance management. However, BEAD does not agree with any implication that continuous, widespread preventative use of any one particular mode of action has direct benefits for resistance management. It is likely that such widespread selection is adding selection pressure for pesticide resistance rather than mitigating it.

10. Combined comments from Andrew LaVigne from the American Seed Trade Association (ASTA) and Jay Vroom, from CropLife America (CLA). ASTA represents over 700 companies involved in seed production, distribution, plant breeding, and related industries in North America. CLA is the national trade association representing the manufacturers, formulators, and distributors of crop protection products in the U.S. (EPA-HQ-OPP-2014-0737-0928).

    Some key excerpts and summaries from the comments:

    1. " . . . a benefits assessment for a single use before the Agency has completed its final risk assessment for imidacloprid, thiamethoxam, and clothianidin compromises registration review. Inviting public comment on a portion of the review on a single crop is highly unusual and appears to be motivated by external pressure regarding neonicotinoid insecticides."
    2. "Numerous data sets exist that show the value of (neonicotinoid insecticide) technology to soybean production."
        a. "The BEAD preliminary report underestimated yield benefits of neonicotinoids to soybean production . . . EPA should seek input from soybean farmers, seed industry experts and academics, in particular extension agronomists, plant pathologists, and entomologists to better understand the value of the technology as it relates to different crop management practices and regions."
        b. AgInfomatics report is cited, which "found an average yield advantage of 2.8% for soybeans . . . relative to untreated seed."

c. Gaspar et al. (2014), Cachot et al. (2014), and Stewart and McClure (2013) are cited for yield impacts of soybean seed treatments, along with a meta-analysis from Bayer (2015).

3. "Yield benefits are best assessed from replicated trials or through meta-analysis approaches."
    a. "EPA evaluated each of the studies independently, rather than using a common scientific approach of meta-analysis. By summarizing the results of multiple studies, a meta-analysis increases the sample size and thus the power to discern the effects of interest, in this case yield effects. The main objectives of a meta-analysis are to summarize and integrate results from a number of individual studies, analyze differences in the results among studies, overcome small sample sizes of individual studies to detect effects of interests, analyze end points that require larger sample sizes, and increase precision in estimating effects. The individual studies cited by EPA were small plot studies to assess insect damage, often limited to a single location and with seeding rates that greatly exceed what is common practice for commercial soybean production. This is not appropriate for a yield benefits study . . . Despite the limitations of these studies, we note that a meta-analysis of the EPA-cited data reveals consistent yield benefits."
    b. "We are concerned that EPA did not contact our member companies to better understand available benefits data on soybeans. If EPA had reviewed data from the registrants and seed companies or had performed their own analysis differently they would have had a more robust and accurate data set showing clear benefits."
4. "While yield is an important factor for an economic benefits analysis, other factors are also important to consider including agronomic benefits, risk management needs, environmental benefits and disadvantages associated with alternatives."
    a. "The BEAD report focuses solely on efficacy of neonicotinoid seed treatment to soybean aphid."
    b. "A benefits assessment for an insecticide seed treatment should include a robust understanding of yield benefits, but should not be limited to only yield, instead it should consider the full production cycle."
    c. "Additional factors (direct and indirect) that should be quantified and included in an EPA benefits analysis of seed treatments include:
        i. "seed treatment enables early planting, more even plant emergence, and more uniform stand establishment."
        ii. "early season pest management."
        iii. "early disease prevention and disease incidence reduction via suppression or control of insect vectors."
        iv. "improved risk management for farmers."
        v. "environmental benefits including the enablement of environmentally beneficial no-till practices."
        vi. "An understanding of alternative pest control options for early season pests, considering practicality of implementation on broad acres, safety profile of those alternatives, including to beneficial insects, and cost of those alternatives to farmers and the agriculture economy."

d. "The EPA recognized that the adoption rate for neonicotinoid seed treatment on soybeans is fairly low compared to other crops . . . were applied on 30% of soybean acres. Therefore according to EPA's own report, soybean growers can and do make a determination closer to planting to use neonicotinoid pesticides. Soybean seed treatment typically occurs at the retail level to accommodate this real-time decision making . . . non-treated soybean seed is readily available."
e. A comment emphasizes the importance of soil dwelling pests, and notes that seed treatment options are preferable to application of soil insecticides.
f. "Although soybean aphids are perhaps the most-studied of the soybean insect pests, focusing on soybean aphid provides only a narrow view of insect pests in soybean production."
g. The importance of bean leaf beetle (BLB) and its vectoring of the bean pod mottle virus (BPMV) is emphasized.

5. "The process used by EPA to date is inconsistent with law and basic principles of fairness."
   a. "EPA should prepare a benefits assessment for all of the uses of an active ingredient after it has completed its risk assessment and after it has established a risk of concern."
   b. "EPA should first use its authority under FIFRA Section 3(c)(2)(B) to call-in benefits data from registrants and engage stakeholders in order to assure that it has a complete benefits data base" including efficacy/product performance data. "To our knowledge, the agency has not called in the efficacy data for these uses of the specific neonicotinoid insecticides. Before EPA completes its consideration of the benefits here, it should follow established procedures, including ensuring that data rights are protected under FIFRA Sections 3 and 10.
   c. "EPA's action is not only inconsistent with its own established procedures and practices, it singles out three active ingredients for handling different than the other active ingredients registered for use on soybeans, contrary to the core principles embodied in FIFRA. *See e.g.,* FIFRA Section 3(c)5 ('Where two pesticides meet the requirements of this paragraph, one should not be registered in preference to the other.')."

BEAD RESPONSE: BEAD appreciates CLA's and ASTA's submission of comments. Regarding the comments on OPP's processes, procedures, and scientific quality standards, please refer to Section I.1, page 3 of this document.

BEAD notes that the publication of its assessment has elicited numerous comments and brought about valuable input from additional stakeholders that has helped BEAD to refine its estimates. BEAD has incorporated additional data submitted by registrants, university researchers, and other stakeholders and has revised impact estimates accordingly. This is precisely the point of a public comment process and BEAD appreciates the input it has received. Further, OPP met with USDA-OPMP on numerous occasions and got input prior to publishing this analysis: including a coordinated effort

with USDA's North Central IPM Center that was used in the analysis. USDA-OPMP also offered comments on our draft on multiple occasions.

With regard to meta-analysis, without access to raw data or a more detailed discussion of site selection criteria and statistical methodology, BEAD cannot come to any specific conclusion regarding the data sets that were mentioned by multiple commenters. It is unclear from several of these analyses, for example, how much the final yield benefit estimates are weighted by sampling from areas with high insect pressure. As has been stated in response to other meta-analysis submissions, given that BEAD's original benefits analysis was criticized for lacking adequate characterization of regional variability, it stands to reason that the same criticism likely applies to the other meta-analysis approaches discussed here, which seek to define an overall national average for soybean benefits. However, BEAD does appreciate that a regionally balanced and standardized approach for meta-analysis approach would be very useful for estimating impacts from neonicotinoid seed treatments on soybeans. BEAD is neither in a position to concur with, nor object to the results of the various meta-analyses discussed at this time and is interested in getting more information about how such analytical approaches might better inform BEAD's benefit analyses.

BEAD reiterates that its analysis is not a risk assessment or risk management document. As such, the stated considerations about non-monetary benefits such as reduced risk to workers and the environment, while important for future risk management consideration under registration review, are not immediately germane to BEAD's analysis. While BEAD agrees that growers would typically be expected to make pest management decisions in accordance with their own site-specific needs, BEAD remains concerned about the potential availability of untreated seeds to growers, which has been discussed elsewhere in this document. BEAD agrees that soybean aphids are not intended to be the primary target pest of neonicotinoid seed treatments applied to soybeans. BEAD further agrees that early-season control of BLB is important to mitigate the risks of BPMV on soybeans, as has been pointed out by other commenters. BEAD has modified its benefit estimates accordingly.

11. Comments from Barbara Glenn, Ph.D., National Association of State Departments of Agriculture (NASDA). NASDA represents the Commissioners, Secretaries, and Directors of the state departments of agriculture in all fifty states and four U.S. territories. (EPA-HQ-OPP-2014-0737-0919).

    Some key excerpts and summaries from the comments:

    1. ". . . we request EPA engage soybean growers, state agricultural extension offices, state departments of agriculture, and other interested agricultural stakeholders to revisit and improve the scope and methodology utilized in order to accurately determine the benefits of neonicotinoids to soybeans, or any other crop system."
    2. "We note EPA registered neonicotinoids as 'reduced risk' alternatives to organophosphates and other older classes of chemistry . . ."

3. "Across the fifty states and four territories, there are large variations in crop production practices and pest management challenges. This large amount of agricultural diversity requires a robust review of all elements, variables, and scientifically sound data in order to measure the true benefit of an entire class of chemistry to a complete crop system." Cites comments submitted by Cachot et al, " and we recommend EPA undertake a similar, comprehensive review of various factors and elements in any future determination of the benefits of neonicotinoid seed treatments, or any other crop protection tools."

BEAD RESPONSE: BEAD appreciates the comments on behalf of NASDA. With regard to engagement of numerous additional stakeholders, the established comment period for BEAD's benefits analysis has elicited numerous comments from the stakeholders NASDA identifies and BEAD concurs with many of the criticisms, comments, and suggestions provided on how to improve our assessment of neonicotinoid seed treatment benefits for soybeans. With regard to the 'reduced-risk' status for a number of neonicotinoid active ingredients, BEAD agrees that in many cases, usage of neonicotinoids in general has displaced a significant amount of usage of older chemical classes across numerous crops and use patterns. However, with specific regard to neonicotinoid seed treatments on soybeans, BEAD notes that very little insecticide usage of any kind was recorded on soybeans prior to 2004. Further, recent usage data (MRD, 2004-2013) show that usage of foliar insecticides, from several modes of action (including organophosphates and synthetic pyrethroids) on soybeans has appreciably increased at the same time that adoption of neonicotinoid seed treatment usage has also increased.

BEAD agrees with the comment about varied production practices and pest management challenges by region. BEAD has revised its characterization of regional pest differences and appreciates that a number of submitted comments have helped to improve BEAD's awareness of these important regional nuances and the factors that affect the relative likelihood of benefits from usage of neonicotinoid seed treatments on soybeans.

12. Valent U.S.A. Corporation (Valent). Valent is a registrant and distributor of pesticides. (EPA-HQ-OPP-2014-0737-917).

Some key excerpts and summaries from the comments:

1. "While registration review is in progress for imidacloprid, clothianidin, and thiamethoxam, Valent is not aware of EPA being near the point of having to make a risk-benefit assessment or regulatory decision for any of these chemicals. . . In this context, we believe it is inappropriate to reach a conclusion at this stage of the process that 'seed treatments provide negligible overall benefits to soybean production,' based on a relatively limited data set. . . it is inappropriate not to request data from Valent, in its capacity as the registrant of technical clothianidin. Valent also questions EPA's decision not to consult the community of soybean growers directly when assessing the benefits of these products. . . Valent requests clarification from EPA on the purpose and intent of releasing the soybean benefits assessment for

public comment at this time . . . Valent would also like to understand if EPA intends to address the benefits of neonicotinoids for other crops in a similar manner, and if so, whether EPA will publish assessments for those crop/use scenarios having both positive as well as negative benefit conclusions."

2. Cites the AgInfomatics report and notes Valent's co-sponsorship of said analysis. "While BEAD based its preliminary yield benefits conclusions on 34 field efficacy studies for thiamethoxam and 26 for imidacloprid in nine states, the AgInfomatics (2014) analysis was based on 642 observations of neonicotinoid soybean seed treatment versus untreated controls generated from 289 site-years of data from small plot studies conducted in 23 states from 2001 to 2013. These observations included all those cited by BEAD."
3. Cites Esker and Conley (2012) discussing a probabilistic approach to seed treatment benefits for soybean growers and the benefits of prophylactic usage.
4. Valent disagrees with EPA's assumption of tank-mixing in the original benefits estimate, and states that " . . . target pest scouting for treatment thresholds" would dictate insecticide timing "rather than timing of another pesticide application. In addition, practical considerations such as nozzle/sprayer setup and tank-mix chemical compatibility must be considered before adding an insecticide to an existing foliar spray . . ."
5. Valent objects to BEAD's characterization of the 'no pest response' associated with most seed treatment usage in the U.S. "When farmers buy treated seed, they are buying a package which includes specific soybean genetic material protected with several active ingredients intended to ensure a strong crop stand. The acceptance of an insecticide in this package is a conscious choice made by farmers because they believe, or have historically observed, a benefit from its use. It is unreasonable to assume that simply because farmers cannot identify each specific pest that this package is protecting against, that they would pay for something they did not expect to derive value from."
6. "Furthermore . . . (citing AgInfomatics) . . . attributes that farmers value are not solely economic, but include the reduced environmental and health risk presented by neonicotinoid seed treatment as compared to foliar application of older broad spectrum chemistries."
7. "We believe that, in their totality, the AgInfomatics reports represent a much more complete and objective analysis of the socio-economic value that neonicotinoid insecticides bring than any other studies published to date. In this spirit, we urge EPA reviewers to give all of these reports their full and serious consideration as registration review of the neonicotinoid insecticides proceeds to completion."

BEAD RESPONSE: With regard to risk-management procedures under Registration Review, BEAD reiterates that its benefit analysis is not a risk management document; it provides one part of the risk and benefit information that is required under FIFRA. OPP will respond separately to comments that relate to OPP's processes, procedures, and scientific quality standards.

With regard to the AgInfomatics 2014 analysis, BEAD received the final AgInfomatics analysis after completing the draft benefits assessment for soybeans. Additionally, after

several in-person discussions with the primary authors, BEAD is generally familiar with their analytical approach, which even for soybeans, was broader in scope than BEAD's own approach, which was solely focused on seed treatments. Generally speaking, BEAD notes that AgInfomatics utilized data that was not immediately available to BEAD at the time of the original analysis, and that typically, BEAD benefit assessments are based upon publicly available efficacy literature including peer-reviewed sources, and ESA's Arthropod Management Tests database. BEAD notes that publication of both its original assessment and the AgInfomatics assessment has been very helpful in bringing additional data to light for OPP's consideration. BEAD also had differences of opinion with the way AgInfomatics arrived at benefit estimates, particularly with their assumptions regarding the costs of scouting in current scenarios vs. neonicotinoid-free scenarios, as well as the way acreage was allocated to alternatives, even for usage where no target pest was identified. However, BEAD notes that final impact estimates ($0-$6 an acre by BEAD vs. $3.30 per acre by AgInfomatics) were comparable.

With regard to the tank-mixing assumption, BEAD acknowledges that the original assumption that foliar insecticides would simply be tank-mixed with existing pesticide applications to soybeans is not valid in all cases. BEAD concurs that an impact estimate should include the costs of an additional pass over the field to make such a foliar application, and the revised impact tables that are presented later reflect this change.

With regard to the Esker and Conley (2012) paper, BEAD agrees that this research provides an interesting insight into probabilistic approaches to estimation of seed treatment benefits. BEAD has provided specific responses to this work in an earlier response to the comments submitted by Adam Gaspar. Generally speaking, the probabilistic approach presented by Esker and Conley reveals a good deal of variability in the yield response for soybeans grown in Wisconsin. Further, the work projects that the probability of benefits is highly correlated with both the baseline yield for a given site, and also with the soybean commodity price, whereby the likelihood of a seed treatment investment providing a break-even return are much more likely under conditions of high soybean prices and high baseline yields, and the likelihood of returns decreases as these variables decrease. However, for sites with known pest pressure, BEAD concurs with the general conclusion that soybean seed treatments are very effective at protecting seeds from soil-dwelling pests and that yield is protected under conditions of high pest pressure.

With regard to target pest designation, BEAD understands that there can be instances where growers decline to respond with a target pest on the surveys used to collect data. See Comment I.12. While BEAD agrees that growers would typically be expected to make pest management decisions in accordance with their own site-specific needs, BEAD remains concerned about the potential availability of untreated seeds to growers, which has been discussed elsewhere in this document.

Finally, BEAD reiterates that its analysis is not a risk assessment or risk management document. As such, the stated considerations about non-monetary benefits such as

reduced risk to workers and the environment, while important for future risk management consideration under registration review, is not immediately germane to BEAD's analysis.

13. Bayer CropScience (Bayer). Bayer is a registrant and distributor of pesticides. (EPA-HQ-OPP-2014-0737-0905). Bayer submitted a large set of comments and included both a summary and an external review their own meta-analysis approach.

    Some key excerpts and summaries from the comments:

    1. "Bayer CropScience would, however like to record its deep concern that EPA could take a preliminary scientific document released for comment and accompany it with a press release which purports that the findings are an established fact. While the document prepared by BEAD acknowledges uncertainties in the report and EPA has requested comments via the Federal Register Process, EPA has deviated to such an extent from its established and published process of conducting Registration Review, and additionally issued inaccurate details to the Press, that scientific discussion has been undermined, the registration process has been biased, and serious damage has been done to the reputation of a class of compounds that has provided major environmental, economic and agronomic benefits as shown by its adoption by growers."
    2. A meta-analysis conducted by Bayer "shows a very clear, agronomically and statistically significant average increase in yield of 2.6 bushels/acre. Based on current soybean market prices, the average yield increase delivers more than a three to one return on investment to the grower. Furthermore this finding is in agreement with an independent study conducted by mid-South entomologists on their own dataset which found a positive yield increase of 2.5 bushels/acre from neonicotinoid seed treatment use.
    3. Bayer discusses extensive technical objections to the preliminary conclusions of BEAD's memo:
        a. Yield protection benefits are understated by BEAD, as demonstrated by Bayer's meta-analysis of the same data.
            i. Bayer characterizes EPA's analysis as a 'vote count' approach and suggests that meta-analysis of the same data shows a significant yield benefit for soybeans.
            ii. They note that fungicidal and nematicidal seed treatments might have confounded EPA's analysis.
            iii. "Neonicotinoid seed treatment use resulted in positive yield responses in 82% of the observations, with a statistically significant benefit of 2.6 bushels per acre on average."
            iv. "Our meta-analysis approach also allows us to separate out the data by different factors and analyze the benefit of insecticidal seed treatments."
            v. "Seed applied insecticides when used with a foliar insecticide brought a statistically significant yield benefit of 3.3 bushels per acre, compared to a foliar insecticide alone."

vi. Cites Gaspar (2015) to point out that seed treatments allow for high yield at lower seeding rates than untreated seed. "At higher seeding rates (which are less profitable) the advantage of neonicotinoid seed treatments decreases . . . The cost of soybean seed continues to increase each year, causing farmers to switch to lower planting populations. This trend will continue into the future and could potentially accelerate as multiple herbicide tolerance traits are pyramided into soybean cultivars to combat weed resistance issues."

vii. Bayer claims that "current pest management thresholds do not accurately predict the value of insecticidal seed treatments due to the nature of the benefits from neonicotinoids which results in yield gains when multiple soil and foliar pests are present below their individual threshold level."

viii. A third-party review from RTI International agrees with Bayer's findings.

ix. "The Mid-South [*sic*] entomologists' results (75% positive response, 2.5 bushel average) are very similar to our meta-analysis of the EPA's cited studies. Therefore the magnitude of benefits observed by Mid-South [*sic*] entomologists are not unique to their region, but instead demonstrate that the use of appropriate and thorough analyses consistently demonstrate the significant yield benefits provided by neonicotinoid seed treatments."

b. "Yield benefits of 2.6 bushels represents approximately $26 per acre for farmer's [*sic*] today (USDA 2013). Neonicotinoid seed treatments cost the farmer approximately $7.50 per acre, therefore generating around $18.50 in profit for soybean farmers on each acre or greater than a 3 to 1 return on investment." The length of activity of neonicotinoid seed treatments is higher than what is stated by BEAD. Bayer claims 6-7 weeks after planting rather than 3-4, with citations indicating that aphid mortality is observed at 6-7 weeks after planting.

i. For soybean aphid, this extended period of activity is significant. "Soybean plants do not experience yield loss in response to soybean aphid feeding after the middle of the fifth reproductive stage (R5.5), vulnerable to soybean aphid in the midwest [*sic*]. Therefore, neonicotinoid seed treatments are capable of protecting soybean plants for half of the season from soybean aphid."

ii. "University research currently undergoing the peer-review publication process found that the adoption of neonicotinoid seed treatments has led to a region-wide decrease in both the severity and frequency of soybean aphid outbreaks (Bahlai et al. 2014) . . . "by delaying the establishment and growth of soybean aphid populations to the extent that they either reach the economic threshold later in the season or outright fail to reach threshold. The decrease in soybean aphid outbreaks provides region wide economic and environmental benefits through decreased need for foliar insecticide applications."

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c. The ability of farmers to tank-mix insecticides with current herbicide and fungicide applications is challenged.
    i. "Farmers often cannot effectively apply a tank mix of an insecticide and another pesticide. Herbicide applications are often applied at different times than insecticides and require different spray nozzles." (for droplet size control, for example).
    ii. ". . . only about 20% of soybean acres receive a foliar fungicide. In addition fungicide applications are most frequently made at the third reproductive stage of soybean, which often occurs before the optimal timing for insecticide applications targeting soybean aphids or late season bean leaf beetles."
d. The comparable cost of applications of neonicotinoid seed treatments and foliar insecticides is discussed.
    i. " . . . a true comparison of the economic benefits of neonicotinoid seed treatments must account for the application cost savings."
    ii. "Capturing the true cost of pesticide applications is often difficult given variable fuel costs and spray equipment and maintenance costs for farmers. Therefore, the rates charged by private pesticide applicators are often used to most accurately measure the cost of pesticide applications for farmers."
    iii. A table is provided that summarizes costs of application as $7-$17 per acre for ground applications (the extra $10 accounts for a bushel yield loss for late season applications due to field damage from ground equipment) and $10 for aerial applications.

4. A number of procedural objections were raised regarding OPP's process.
    a. "EPA's publication for comment of an incomplete 'benefits document' under 40 CFR 155.53 is not appropriate."
    b. "EPA Conducted the Benefits Assessment knowing that it did not fulfill a 'best available data' criterion."
    c. "EPA has already determined that soybean seed treatment provides benefits in Soybean." Based upon a Section 18 exemption granted in 2003 for Iowa and Wisconsin for imidacloprid seed treatment for control of bean leaf beetle to help limit the spread of bean pod mottle virus. "It is not clear from EPA's opinion document what information differs from 2003 when EPA either concurred with, or at the very least was convinced by the market, that such a need was fulfilled by imidacloprid."

BEAD RESPONSE: BEAD appreciates Bayer's submission. Regarding comments that relate to OPP's process, procedures, and scientific quality standards, please refer to Section I.1 (page 3) of this document.

With regard to meta-analysis, without access to raw data or a more detailed discussion of site selection criteria and statistical methodology, BEAD cannot come to any specific conclusion regarding this data sets that were mentioned by multiple commenters. It is unclear from several of these analyses, for example, how much the final yield benefit

estimates are weighted by sampling from areas with high insect pressure. As has been stated in response to other meta-analysis submissions, given that BEAD's original benefits analysis was criticized for lacking adequate characterization of regional variability, it stands to reason that the same criticism likely applies to the other meta-analysis approaches discussed here, which seek to define an overall national average for soybean benefits.

With regard to BEAD's use of a 'vote count' (a term used by Bayer) approach in its analysis of publicly available efficacy data that measured yield, BEAD is concerned that an oversimplification can occur when multiple studies are aggregated to determine an overall mean. Without careful statistical treatment of various confounding sources of variability, some of the proposed meta-analytical approaches appear to attempt to draw meaning from small numerical differences in spite of statistical insignificance for many of those comparisons. Therefore, BEAD would note that a meta-analysis approach has its limitations and pitfalls as well. However, BEAD does appreciate that a regionally balanced and standardized approach for meta-analysis approach would be very useful for estimating impacts from neonicotinoid seed treatments on soybeans. For the purposes of refined regional benefit estimates for the mid-South, a 2.5 bushel per acre yield estimate was used, which corresponds well to the results obtained by Bayer, mid-South researchers, and other commenters.

BEAD appreciates the additional information regarding the relative duration of bioactivity in soybean plants for seed treatments applied to soybeans. BEAD does agree that for soybean aphid in particular, there might be instances where early season controls exerted on low-level populations may delay or preclude the need for a foliar insecticide targeting aphids. BEAD agrees that this could provide benefits to soybean growers in limited situations. However, as has been noted by other commenters, soybean aphids are not usually the primary target pest for seed treatment usage on soybeans.

BEAD has revised its estimates to include the additional costs associated with a foliar application. (See Section IV). BEAD notes that its estimate for ground applications, derived from enterprise budgets for soybean production in Iowa, is the same as the estimate provided by Bayer in the preceding comments. BEAD did not include any cost factor for the loss of plants due to the use of ground application equipment, as BEAD's assessment is focused on early season ground applications where these effects would be expected to be very small.

14. AgInfomatics (EPA-HQ-OPP-2014-0737-0350): AgInfomatics, a collaborative group of entomologists, agronomists, and economists, authored a report on the value of neonicotinoid insecticides to American agriculture on behalf of a number of pesticide registrant sponsors. In addition to the submitted comments below, AgInfomatics submitted their complete 2014 study. AgInfomatics researchers also met in person with BEAD staff on two occasions to discuss methodology, results, and contrasts with BEAD's effort, which focused solely on neonicotinoid seed treatments on soybeans.

    Some key excerpts and summaries from the comments:

1. "BEAD based its preliminary conclusions on a limited number of efficacy studies (34 for thiamethoxam and 26 for imidacloprid). AgInfomatics completed its own yield benefits analysis using 642 observations of neonicotinoid seed treatments vs. untreated controls generated from 289 site-years of data from small-plot studies conducted in 23 states from 2001 to 2013. These studies included yield data for small plots treated with clothianidin, imidacloprid, and thiamethoxam, plus a few treated with dinotefuran and mixtures of more than one of these neonicotinoids. In addition, 216 observations of neonicotinoid seed treatments came from a variety of public sources . . . and included all the studies used in the BEAD analysis.
2. We found significant variability in the yield benefits of soybean seeds treated with neonicotinoids compared to untreated control plots or when compared to other insecticides . . ." averaging 2.8% relative to the untreated control. AgInfomatics' analysis indicates that a farmer would recoup the cost of a seed treatment approximately 59% of the time. "This $8.26/acre average net gain and 59% break-even probability are simple national averages across all soybean acres. Many growers using neonicotinoid seed treatments have higher average yields and face greater insect pressure, and so would earn greater net returns to neonicotinoid seed treatments and, at a minimum, have a larger break-even probability."
    a. "Neonicotinoid seed treatments have relatively large yield benefits in some states, particularly in some northern locations and southern states. These data show that sweeping geographic generalizations regarding the yield impacts of neonicotinoid seed treatments are probably erroneous. To state, as the EPA did, that there are 'no significant benefits' confounds the meaning of a minor statistical significance test with the production realities of thousands of North American soybean farmers.
    b. Using survey data to capture non-monetary benefits (as estimated by growers), AgInfomatics estimates an "average value of $11.93/acre for soybean growers relative to their next best alternative." This estimate includes grower estimates accounting for "effectiveness of insect control, improved risk management, protecting the yield, time-saving, resistance, and reduced worker exposure concerns."
3. "Foliar insecticides will not provide protection from soil dwelling pests, such as seed maggots, wireworms, and white grubs. . . No soil insecticides are registered for use in U.S. soybeans, so farmers have no insecticide alternatives available to manage these and similar soil-dwelling pests except neonicotinoid seed treatments."
4. " . . the cost of alternative foliar insecticides is comparable to neonicotinoid seed treatments. However, once the additional cost of scouting and foliar applications are included, we estimate the net cost increase for farmers currently using neonicotinoid seed treatments is $3.30 per acre to switch to a foliar system. This increase occurs, even when assuming about one-third of the acres currently treated with neonicotinoid seed treatments would remain untreated . . ."

BEAD RESPONSE: BEAD appreciates the comments submitted by AgInfomatics and notes here that beyond the above submitted public comments, BEAD has also evaluated the entire analysis for neonicotinoids and has met in person with the main authors of the

analysis to discuss the methodologies and conclusions. BEAD acknowledges that AgInfomatics used a larger number of studies, including data from registrants that was not immediately available to BEAD at the time of its analysis. BEAD agrees with the conclusion reached by AgInfomatics that yield impacts from seed treatments on soybeans are variable. This is underscored by the conclusion that break-even costs are only expected to be recouped approximately 60% of the time. BEAD notes that in contrast to other analyses, such as Esker and Conley (2012), this probability is not discussed in terms of variable commodity prices and baseline yields. BEAD agrees that the likelihood of benefits would likely be higher for growers with high insect pressure and would state that this particular effect might be most notable for the mid-South, as has been discussed in previous comment responses. BEAD agrees that the regional nuances to benefits are important and that some particular regions are likely to see benefits that are higher than average for neonicotinoid seed treatments.

With regard to the non-monetary benefits estimated by AgInfomatics, BEAD notes that this estimate appears to be based on an aggregation of growers' opinions from listening sessions and survey instruments. BEAD has not attempted to put monetary value on attributes such as convenience, ease of use, etc. BEAD also reiterates that its benefits analysis is not a risk assessment or risk management proposal. As such, the stated considerations about non-monetary benefits such as reduced risk to workers and the environment, while important for future risk management consideration under registration review, is not immediately germane to BEAD's analysis.

Regarding soil insecticides, BEAD understands that control options for soil insects are limited for soybeans. BEAD was able to confirm that seed treatments containing permethrin are marketed available for use on soybeans in the United States, although these products are not widely utilized given the availability of neonicotinoid seed treatments. However, BEAD also understands that given the apparent limited current availability of permethrin treated seed, and the lack of any systemic activity (i.e., protection of the plant after germination) this may not necessarily be an ideal alternative to seed treated with neonicotinoids. Several commenters have also underscored the potential difficulty in controlling problematic soil pests if neonicotinoid treated seed was not available.

Finally, with regard to costs of foliar applications, BEAD acknowledges that there are costs to applying foliar insecticides beyond the cost of the product itself and in a revised impact analysis presented later, does incorporate the costs of additional trips across the field for insecticide application(s). BEAD notes that AgInfomatics' analysis seems to fundamentally double-count impact by counting the yield-loss associated with comparisons to untreated soybeans, but also counting the costs of foliar insecticides, which should be expected to be equally effective as seed treatments, and thus eliminate yield losses. With regard to scouting, BEAD disagrees with the implication that seed treatments significantly reduce scouting costs for soybeans. While the need for scouting might be somewhat reduced during the time immediately after planting (i.e., the time of highest bioactivity in emerging soybean seedlings), scouting is still necessary in soybeans for weeds, foliar diseases, nutrient management, and insect pests that fall outside the

activity spectrum of neonicotinoid seed treatments. Therefore, BEAD would not project that scouting costs would decline very much for soybeans with treated seeds vs. untreated seeds.

15. Center for Regulatory Effectiveness (EPA-HQ-OPP-2014-0737-0785): The Center for Regulatory Effectiveness is a private regulatory watchdog organization. A primary interest of the Center is agency compliance with "good government' statutes such as the Data Quality Act. The Center raised several points relevant to the substance of the Soybean Assessment, listed below. Center comments regarding EPA processes and procedures will be addressed in a separate document.

    1. The 'baseline' and methodology of the economic analysis was unclear.
    2. Average soybean yields used in the economic analysis were not consistent with the underlying data.
    3. The 'proprietary' data cited in the assessment are of unclear quality.

    BEAD RESPONSE: BEAD appreciates the opportunity to clarify and correct the assessment.

    1. The methodology BEAD uses in conducting its benefits assessments is standard for understanding the benefits of a technology: in the absence of a technology (*e.g.*, a neonicotinoid seed treatment), what would the user of the technology (e.g., a soybean grower) do and what effect would that have on a relevant measure of benefits (*e.g.*, net operating revenue, defined as the difference between gross revenue and variable costs)? The 'baseline' depends on the perspective one takes. Typically in government regulations, the analyst assesses an action that would restrict the user's choices and would measure the impact of switching from use of the technology to the next best alternative, where the impact is measured in terms of lost revenue and/or increased cost. EPA is not at this time proposing to take an action that would affect the availability of neonicotinoid soybean seed treatments; our goal is to quantify the benefits of the neonicotinoid seed treatments to soybean growers. Hence, BEAD's perspective, as shown in Table 4 of the assessment, is essentially to assess the gains of employing neonicotinoid seed treatments in lieu of the next best alternative in terms of additional revenue and/or decreased cost.

       BEAD acknowledges that the terminology used by EPA in the context of pesticide regulation can be confusing compared to the usual cost-benefit terminology where one typically compares the costs and benefits of a regulation. The terminology used by EPA in the context of pesticide regulation stems from FIFRA, which instructs EPA to consider the risks and benefits of a pesticide. In this case, the use of the term 'benefits' is appropriate since BEAD is assessing the benefits provided by neonicotinoid seed treatments to soybean growers. As explained elsewhere, this benefit is appropriately measured in comparison to alternative pest control strategies, not to a scenario with no pest control.

2. BEAD acknowledges a mathematical error. The average annual soybean yield was reported in Table 1 of the Soybean Assessment as 44.6 bushels per acre, rounded to 45 bu/acre in Table 4 to calculate the benefits. However, from Table 1 of the soybean assessment, average annual production of soybean from 2009 to 2013 was approximately 3,220,826,000 bushels grown on approximately 75,760,000 acres. This implies an average of about 42.5 bu/acre.

   As a result of this error, the typical gross revenue per acre used in Table 4 of Soybean Assessment was biased upward by about $25 per acre, as was the typical net operating revenue for both the neonicotinoid seed treatment scenario and the flubendiamide foliar treatment scenario. The cost differential remains about $6 per acre; however, that represents a 1.85% increase in net operating revenue with the neonicotinoid seed treatment compared to the alternative, not 1.70% as calculated in the Soybean Assessment.

3. The proprietary data used by BEAD for the Soybean Assessment is of very high quality. These data are not generated by EPA; the data are purchased by EPA from a leading agribusiness market research firm. For decades, the firm has provided market data across various economic sectors to consumer and commercial organizations, including pesticide chemical companies. EPA has purchased access to the data for more than 20 years.

   Data are collected by surveys of agricultural producers. The survey participants are selected based on the location and size of the operation to develop a representative sample of producers in the continental U.S. Typically, the data are statistically valid at the state level; in the case of soybean, data are often statistically valid at the level of the Crop Reporting District. Producers may participate in the survey over time, which permits valid comparisons between time periods. Data on pesticide use is collected by product and includes the area treated (including area treated multiple times), application rates, the stage of the crop at application, product price, target pest, *etc*. Information may be verified through complementary surveys, for example, surveys of pesticide distributors to ensure that reported prices are within normal ranges.

   These data meet all the relevant quality measures as outlined in EPA's information quality guidelines. The survey methodology ensures that the data are accurate, reliable, and unbiased.

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IV. REVISED BENEFIT ASSESSMENT: CLARIFICATIONS, REVISIONS, AND REMAINING UNCERTAINTIES

Clarification of Purpose and Scope

BEAD received a number of helpful comments, which have helped in resolving uncertainties, informing BEAD's assumptions, and providing useful guidance in refining BEAD's impact/benefit estimates.

For clarification on the purpose of this document, BEAD reiterates its response to a number of public commenters and media reports regarding this assessment: BEAD's analysis of benefits for neonicotinoid seed treatment insecticides on soybeans was not a discussion of efficacy, but rather a consideration of the likelihood of benefits for growers. The scientific evidence and expert input is overwhelmingly in agreement that neonicotinoid seed treatments have very good pest control efficacy and are effective at controlling the intended target pests for soybeans for the intended and limited period of bioactivity. Nowhere in BEAD's original assessment nor in this response to comments document does BEAD imply that neonicotinoid seed treatments are not effective at controlling pests when populations of those pests are present in fields.

Furthermore, BEAD also reiterates that its benefit analysis did not, and does not constitute a risk management proposal. BEAD does not analyze the relative risks of alternative pest control tactics such as applications of foliar insecticides to soybeans. While the risk assessments of neonicotinoids are forthcoming, BEAD's analysis was strictly focused on an examination of the benefits of neonicotinoid seed treatments by comparing the current situation of their use to a hypothetical situation where neonicotinoid seed treatments do not exist.

Finally, while BEAD appreciates public comments on the more broadly categorized benefits of neonicotinoids as a class of chemicals, and agrees that neonicotinoid usage has significantly displaced usage of broad-spectrum insecticides from older chemical classes, BEAD's analysis was strictly focused on seed treatments for one crop. This is of particular note when drawing comparisons between BEAD's analyses and, for example, the analyses conducted by AgInfomatics, which sought to characterize multiple benefits (both economic and non-monetary benefits) of all neonicotinoid usage on a much wider variety of crops, and also included qualitative assessments based upon grower interviews.

Probabilistic Approaches and National-Level Meta-analyses

BEAD appreciates the data and suggestions that were shared by multiple commenters regarding area-wide meta-analysis approaches to estimating yield benefits from usage of neonicotinoid insecticide seed treatments on soybeans, including submissions from AgInfomatics, Bayer, Syngenta, DuPont, mid-South researchers, Adam Gaspar, etc. Because raw data and specific statistical methodologies were not submitted, BEAD did not attempt to reproduce or independently verify the results of these analyses. However, BEAD does recognize that there are inherent limitations to an analysis based solely upon review of independent, small-plot field trial data as is done with the soybean benefit assessment.

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While there was general criticism regarding BEAD's use of a 'vote count' (a term used by commenters) approach in its analysis of publicly available efficacy data that measured yield, BEAD is concerned that an oversimplification can occur when multiple studies are aggregated to determine an overall mean. Without careful statistical treatment of various confounding sources of variability, some of the proposed meta-analytical approaches attempt to draw meaning from small numerical differences in spite of statistical insignificance for many of those comparisons. Therefore, BEAD would note that a meta-analysis approach has its limitations and pitfalls as well.

BEAD also notes that individual grower choices in pest control tactics are ideally driven by a knowledge of site-specific factors, rather than broad probability-based metrics. BEAD emphasizes that while meta-analysis can be a useful methodological tool for use in assessment, the results of a meta-analysis are not likely appropriate as a decision-support system for a grower deciding whether or not to utilize seed treatments on a particular site. A good working knowledge of a site's history regarding pest presence and abundance, and past experience is typically expected to form the basis of such decisions. While a nation-wide meta-analysis might be useful from the standpoint of identifying a baseline probability for expected yield protection in general, the specifics of this likelihood are much further informed by site-specific information known mostly by individual growers and their pest control consultants. It seems to make little sense for a grower of soybeans in an area where there has never been a high likelihood of soil insect pressure or past issues with BPMV or early-season defoliation damage from BLB to choose to spend money on seed treatments based simply on a hypothetical national probability. And conversely, for a grower with a known history of pest pressure, it is likely that site-specific estimates of benefits are far more useful in choosing a control tactic than a generalized average likelihood of yield losses based on a hypothetical national baseline probability. This need for site-specific information in the development of pest management decision-making is underscored by comments submitted by a host of leading national experts in soybean production, as well as by USDA-ARS's submitted comments.

Site variability, which can be driven by climatic differences, different soil types, different variety choices, different agronomic practices, different pest pressures, etc., must be properly identified and addressed before any global averages can be reported as a useful, meaningful result. The valid criticism of EPA's original approach being too generic and not adequately nuanced by region could equally be applied to the proposed meta-analyses discussed here, as all have attempted to amalgamate national data and develop an overall yield impact average, rather than present averages for distinct areas of the country. BEAD does acknowledge that the work cited by Gaspar et al. is regionally focused to the upper-Midwest and the mid-South analysis was focused on the Mississippi Delta region. However, BEAD is unsure if adequate data are available for a similar regional refinement of other submitted meta-analysis data. For the purposes of estimate refinement, BEAD will assume that the results of submitted meta-analyses from the mid-South and elsewhere are generally correct and thus, for its newly refined impact analysis (presented here for the mid-South), BEAD provisionally uses an estimate of 2.5 bushels per acre impact in the absence of neonicotinoid seed treatments on soybeans in the mid-South. BEAD's original analysis did not project any yield losses.

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Revision Summary

BEAD's original assessment concluded that, because of the often low likelihood of the presence of pests targeted by neonicotinoid seed treatments and because much of the usage of seed treatments appeared to be done in a preventative/prophylactic manner without regard to pest pressure, the expected benefits of using neonicotinoid seed treatments for most growers is low. For this revision, BEAD is adopting more standard terminology and is estimating the loss a soybean grower who uses neonicotinoid-treated seed might incur in the absence of the seed treatment. BEAD has updated yield and price information over the five-year period from 2010 to 2014 (USDA NASS, 2010-2014) and variable cost information from USDA Economic Research Service (2012-2013). That is, the national average yield for soybeans from 2010 to 2014 is 43.4 bushels/acre (previously 42.5 bu/acre), the price per bushel averages $12.26/bu (previously $12.03/bu), and average variable costs in 2012 and 2013 are $180/acre (previously $173/acre).

For comparison purposes, we present the estimated loss per acre, given the original assessment conclusions that yield loss would be negligible and growers may switch to a foliar application of another insecticide, in Table 2. For this estimate, flubendiamide was identified as the most costly alternative insecticide. It was assumed that flubendiamide would be applied in combination with another pesticide; no additional application costs were considered. According to market survey day, a neonicotinoid seed treatment costs about $8/acre while flubendiamide costs about $14/acre (MRD, 2009-2013). Thus, a grower switching to a foliar application of flubendiamide in the absence of neonicotinoid seed treatments would incur additional costs of production of about $6/acre. This represents about 1.7% of the calculated net operating revenue of $344/acre, based on average yields and prices and estimated variable production costs.

Table 2: Estimated Impacts to Soybean Growers without Neonicotinoid Seed Treatments, original assessment conclusions.

	Neonicotinoid Seed Treatments Scenario	Flubendiamide
Yield (bu/A)	43.4	43.4
Price ($/bu)	$12.26	$12.26
Gross Revenue ($/A)	$532	$532
Insecticide Costs ($/A)		
seed treatment	$8	
foliar spray		$14
Other Variable Costs ($/A)	$180	$180
Total Variable Operating Costs ($/A)	$188	$194
Net Operating Revenue	$344	$338
Change in Net Operating Revenue		- $6

Numbers may not add due to rounding. Calculations have been adjusted from Myers and Hill (2014) to reflect the most current reported production data and variable costs. Production data represent a national five-year average (USDA NASS, 2010-2014). Active ingredient cost represents national costs as a five-year average (MRD, 2009-2013). Variable costs are reflective of the 2012 and 2013 national average and account for seed; fertilizers; chemicals; custom operations; lube, fuel, and electricity; repairs; purchased irrigation water; and interest on operating capital (USDA Economic Research Service, 2012-2013).

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BEAD also highlighted a number of uncertainties about the benefits of preventative use for certain areas of the United States where pest pressure (particularly pressure from soil pests) was potentially higher than average, citing the example of the Southeastern United States. After reviewing comments and submissions in response to that assessment, BEAD now has information to capture the significant regional variation in climate, agronomic practices, and relative pest pressure that is often observed. Based on information and data submitted by commenters, key refinements are as follows:

1. BEAD is identifying three regions of the country for analysis, based on comments describing unique pest control challenges:
    a. The mid-South (Arkansas, Louisiana, Mississippi, Missouri, and Tennessee). States of the Mississippi Delta region have clarified the reasons for their early planting practices, have discussed the agronomic practices that often exacerbate pest pressure from soil insects, and have explained the reasons that their production practices differ from the rest of the South and the United States as a whole (Section II.3).
    b. The Midwest (Illinois, Iowa, Minnesota, Nebraska, North and South Dakota, and Wisconsin). These states report the potential for substantial damage due to the Bean Leaf Beetle (BLB). While soybean yield is typically quite resilient to early season defoliation from such pests, the BLB can vector the Bean Pod Mottle Virus (BPMV), making early season control important (Section II.4).
    c. All other soybean growing states.

2. Alternative foliar insecticides may not be effective in reducing pest pressure in the mid-South; therefore, it is only assumed that effective alternative foliar insecticides are available for use on soybeans in regions outside of the mid-South.

3. BEAD assumes that there will be no mixing of a foliar insecticide (used as an alternative to seed treatment) with another existing foliar pesticide (e.g., fungicide or herbicide) application that would already be routinely applied to a field. Thus the cost of an additional pass over the field will be incurred.

Commenters also noted differences in scouting costs may exist when using treated versus untreated seeds. BEAD disagrees with the implication that seed treatments significantly reduce scouting costs for soybeans. While the need for scouting might be somewhat reduced during the time immediately after planting when using treated seeds (i.e., the time of highest bioactivity in emerging soybean seedlings), scouting is still necessary in soybeans for weeds, foliar diseases, nutrient management, and insect pests that fall outside the activity spectrum of neonicotinoid seed treatments. Therefore, BEAD does not project that scouting costs will significantly decline for soybeans with treated seeds versus untreated seeds.

BEAD also recognizes that along with the use of alternative control tactics (i.e., permethrin seed treatment) or cultural practices (such as tillage), it is feasible to mitigate some pest damage (and yield loss) by increasing seeding densities in the absence of available neonicotinoid seed

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treatments. Since seed treatments protect the seeds and preclude the need for higher seeding rates, it is possible to achieve a desired yield at a lower seeding rate. BEAD projects that the loss in net operating revenue from the cost of extra seed while accounting for the benefit of over-seeding as a yield protection tactic likely falls somewhere below BEAD's revised (see below) estimated impacts for the mid-South, which addresses the yield losses associated with soil pests in the absence of an effective seed treatment.

Revised Partial Budget Analyses

BEAD is revising the Myers and Hill (2014) partial budget analysis to account for the three refinements listed above. Revisions are provided for each affected region, followed by an estimate of the overall national impact.

As background, BEAD uses a partial budget analysis to place the consequences of neonicotinoid seed treatments no longer being available to soybean growers in the context of grower revenue. Impacts are compared to net operating revenue, which is defined as the difference between gross revenue and variable operating costs on a per-acre basis. This approach does not account for fixed costs, which are highly dependent on land ownership and the size and diversity of the grower's operation, making them difficult to define on a per-acre basis. As such, results of this analysis may understate the impacts as a percentage of grower income. In particular, small growers may be impacted relatively more than large growers from increased costs because fixed costs are likely to be larger per acre when growers have less acreage across which they may spread the fixed costs of operation. On the other hand, because a farm may produce multiple crops, a single crop analysis could also overstate the impacts as a percentage of grower income.

Mid-South United States per Acre Impacts

A revised impact scenario is presented in Table 3 for the mid-South United States, which includes the Mississippi Delta regions of Missouri, Tennessee, Arkansas, Mississippi, and Louisiana (Arkansas is used as a representative state for the partial budget analysis). While BEAD cannot independently confirm the cited meta-analysis (see Section II.3) of yield benefits for this region, it is notable that the results of that analysis were very close to the results presented by other commenters, including other independent researchers, registrants, etc. Therefore, BEAD revised its previous impact estimate and uses a mid-South baseline scenario (Arkansas), which takes into account the potential yield losses from soil pests in the absence of any effective seed treatment options in line with the results of the meta-analyses, at 2.5 bushels per acre. This is intended to represent a scenario where pressure from soil insect pests is high and no insecticidal seed treatment is available to control these pests. Considering the yield loss from uncontrolled soil pests, impacts are estimated to be about $23 per acre or a loss of about 8.4% of net operating revenue (Table 3).

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Table 3: Estimated Impacts to Soybeans Grown in the Mid-South (Arkansas) Without Access to Any Viable Seed Treatment Options to Control Soil Pests.

	Baseline Scenario: Neonicotinoid Seed Treatments Available	Effective Seed Treatments not Available (2.5 bu/acre yield loss)
Yield (bu/acre)	42	39.5
Price ($/bu)	$12.24	$12.24
Gross Revenue ($/acre)	$514	$483
Insecticide Costs ($/acre)		
Seed Treatment	$8	
Other Variable Costs ($/acre)	$233	$233
Total Variable Operating Costs ($/acre)	$240	$233
Net Operating Revenue	$274	$251
Change in Net Operating Revenue		- $23

Numbers may not add due to rounding. Arkansas production data represents a five-year average (USDA NASS, 2010-2014). Active ingredient cost represent national costs as a five-year average (MRD, 2009-2013). With 89% of total harvested soybean acres in Arkansas being irrigated (USDA Agricultural Census, 2013), a budget specific to furrow irrigation practices was used for this scenario. Variable costs are reflective of Arkansas Enterprise Budget variable costs associated with seed; fertilizers; chemicals; custom operations; lube, fuel, and electricity; and repairs; and interest on operating capital (University of Arkansas, 2015). No costs were reported for purchased irrigation water by University of Arkansas (2015) or by the USDA Economic Research Service for this region (2012-2013).

Midwest United States per Acre Impacts (Areas of BLB/BPMV Pressure)

A revised impact scenario is presented for the Midwestern United States (using Iowa as a representative state for the partial budget analysis) in Table 4, which commenters indicated was an area with the highest likelihood of incidence of BPMV vectored by BLB. Because foliar insecticides are effective at controlling overwintering BLB adults, BEAD projects that in most cases, one foliar insecticide application would be an equal substitute to a neonicotinoid insecticide seed treatment on soybeans. However, in certain limited situations, a second application of insecticides may be required. The second application could further target BLB, or could be used to control an unusual early-season infestation of soybean aphids that otherwise might have been mitigated by usage of a seed treatment.

BEAD finds that in the case of one additional field pass, net revenue would decline $4 per acre (approximately 1.0% of net operating revenue). Two field passes would result in a $16 per acre decline in net revenue (3.8% of net revenue) for soybean growers in the Midwest facing significant BPMV pressure combined with early-season aphid infestations (Table 4).

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Table 4: Estimated Impacts to Soybeans Grown in the Midwest (Iowa) Without Access to Viable Seed Treatment Options to Control Bean Leaf Beetle (One Foliar Insecticide Application) and/or Bean Leaf Beetle Followed by and Early-Infesting Soybean Aphid (Two Foliar Insecticide Applications).

	Baseline Scenario: Neonicotinoid Seed Treatment Available	One foliar Insecticide Application (lambda-cyhalothrin) requiring one additional field pass	Two Foliar Insecticide Applications (lambda-cyhalothrin) requiring two additional field passes
Yield (bu/acre)	48.8	48.8	48.8
Price ($/bu)	$12.25	$12.25	$12.25
Gross Revenue ($/acre)	$598	$598	$598
Insecticide Costs ($/acre)			
Seed Treatment	$8		
Foliar Insecticide		$5	$9
Cost of an Additional Field Pass ($/acre)		$7	$15
Other Variable Costs ($/acre)	$163	$162	$162
Total Variable Operating Costs ($/acre)	$170	$174	$186
Net Operating Revenue	$428	$424	$412
Change in Net Operating Revenue		- $4	- $16

Numbers may not add due to rounding. Production data represents Iowa state five-year average (USDA NASS, 2010-2014). Active ingredient cost represent national costs as a five-year average (MRD, 2009-2013). Variable costs are reflective of Iowa Enterprise Budget variable costs associated with seed; fertilizers; chemicals; custom operations; lube, fuel, and electricity; and repairs; and interest on operating capital seed (Iowa State University, 2015). Additional field pass information represents AgInfomatics (2014) field pass estimates for the Midwest region, updated with 2015 estimates. No costs were reported for purchased irrigation water by Iowa State University (2015) or by the USDA Economic Research Service for this region (2012-2013).

All other Soybean Acres Currently Utilizing Neonicotinoid Seed Treatments, per Acre Impacts

As mentioned, BEAD expects that soybean acres currently utilizing neonicotinoid seed treatments outside of the Midwest and mid-South would not incur any yield losses in the absence of neonicotinoid-treated seed. Because soil pests are highly sporadic, many growers are unlikely to employ the use of foliar treatments. However, some growers may require one additional foliar insecticide application (likely of a pyrethroid or organophosphate) to fields in the absence of any effective seed treatment options. As shown in Table 5, BEAD finds that in the case of one additional field pass, net revenue is expected to decline $4 per acre (a 1.3% decline in net revenue). Note that this slightly differs from the impacts presented for the Midwest as national level production data and variable costs are used.

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Table 5: Estimated Impact for Soybeans Grown in Areas Outside of the Midwest and Mid-South that Currently Utilize Neonicotinoid Seed Treatments (One Foliar Insecticide Application).

	Baseline Scenario: Neonicotinoid Seed Treatment Available	One foliar Insecticide Application (lambda-cyhalothrin) requiring one additional field pass
Yield (bu/acre)	43.4	43.4
Price ($/bu)	$12.19	$12.19
Gross Revenue ($/acre)	$529	$529
Insecticide Costs ($/acre)		
seed treatment	$8	
foliar spray cost for additional passes		$5
Cost of an Additional Field Pass ($/acre)		$7
Other Variable Costs ($/acre)	$180	$180
Total Variable Operating Costs ($/acre)	$188	$192
Net Operating Revenue	$341	$337
Change in Net Operating Revenue		- $4

Numbers may not add due to rounding. Production data represents national five-year average (USDA NASS, 2010-2014). Active ingredient costs represent national costs as a five-year average (MRD, 2009-2013). Variable costs are reflective of 2012 and 2013 national averages and account for seed; fertilizers; chemicals; custom operations; lube, fuel, and electricity; repairs; purchased irrigation water; and interest on operating capital (USDA Economic Research Service, 2012-2013). Additional field pass information represents AgInfomatics (2014) field pass estimates for Midwest region, updated with 2015 estimates.

Revised Estimates of National Impacts

As described in the region-specific analyses, the absence of neonicotinoid-treated seed could result in the following impacts:

- $0 to $23 (0% to 8.4%) loss in net operating revenue in the mid-South if a 2.5 bu/acre yield loss is incurred,
- $0 to $4 (0% to 1%) loss in net operating revenue in the Midwest if one additional field pass is needed,
- $0 to $16 (0% to 3.8%) loss in net operating revenue in the Midwest if two additional field passes with a foliar insecticide are needed, and
- $0 to $4 (0% to 1.3%) loss in net operating revenue for all other soybean acres in the United States that are currently utilizing neonicotinoid treated seed if one additional field pass with a foliar insecticide is needed.

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BEAD determined average national per acre net revenue losses and total national net revenue losses by accounting for the proportion of total national acres that would be impacted by each region-specific scenario. The following explains the methodology used in determining these impacts.

As shown in Table 6, nationally, on average from 2010-2014, approximately 78 million acres of soybeans were grown annually (USDA NASS, 2010-2014). During the same time period, on average, in the mid-South approximately 13.3 million acres of soybeans were grown annually (17% of total national acres) and 41.9 million acres were grown annually in the Midwest (54% of total national acres). The remaining 22.8 million acres of soybeans (29% of total national acres) are grown in other areas of the United States. Neonicotinoid-treated seed is used on part of the national acres grown. Market research data indicate that, on average from 2009-2013, approximately 27 million acres of soybean were planted with neonicotinoid treated seed, including 4.4 million acres of soybeans in the mid-South and 15.6 million acres of soybeans in the Midwest. Overall, 35% of soybean acres in the United States utilized neonicotinoid treated seed annually during this time period.

Table 6: Soybean Acres Grown and Neonicotinoid Seed Treated Acres in the United States, by Region (2009-2013 Average)

	Mid-South[1]	Midwest[2]	Remaining Regions	U.S. Total
U.S. Soybean Acres (in 000s)	13,276	41,900	22,777	77,953
Neonicotinoid Seed Treated Soybean Acres (in 000s)	4,378	15,633	7,337	27,349

Numbers may not add due to rounding. USDA NASS (2010-2014); MRD (2009-2013).
1 States in this region include MO, TN, AR, LA, and MS.
2 States in this region include IA, NE, SD, ND, MN, IL, and WI.

Of the 78 million acres of soybeans grown, 50.6 million acres of soybeans will face no impact as they are not currently using neonicotinoid-treated seed while the remaining 27.3 million soybean acres that utilize neonicotinoid seed treatments may face some impacts. As an upper-bound estimate of national impacts in the absence of neonicotinoid seed treatments, all soybean acres in the mid-South currently using neonicotinoid-treated seed (4.4 million acres) are assumed to face an average loss of 2.5 bushel per acre in the greatest potential cost scenario. Similarly, all 7.3 million acres outside the mid-South and Midwest are assumed to incur a $4 per acre loss in higher pest control cost. In the Midwest example, however, some Midwest soybean acres may need one additional field pass utilizing an alternative foliar insecticide application while others will need two additional field passes.

EPA relied on proprietary pesticide use data (MRD, 2009-2013) to determine the frequency with which acres in the Midwest would need to make one versus two field passes of foliar insecticide applications. Data indicate that 93% of soybean acres treated with chlorpyrifos and/or a synthetic pyrethroid, the most likely alternatives for BLB, received one foliar application (MRD, 2004-2013). It is notable that this figure includes the entire growing season and accounts for all pests targeted with alternative foliar insecticides throughout the year—not just those targeted with neonicotinoid seed treatments. Thus, it is likely an overestimate of the number of acres that

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would need two additional field passes. Given this information, BEAD estimates that at most 7% of the treated acres in the Midwest, or almost 1.1 million acres, would be treated twice with alternative foliar insecticides. The remaining 21.9 million acres of neonicotinoid seed-treated soybean acres nationally—that is, 14.5 million acres in the Midwest and 7.3 million in the rest of the country—are expected to need one additional pass (see Table 7).

Table 7: Estimated Average Impact Soybeans Grown in the United States without Neonicotinoid Seed Treatment.

	Acres Affected (in 000s)	Baseline Net Revenue per Acre: Neonicotinoid Seed Treatments Available	Per Acre Impact in the Absence of Neonicotinoid Seed Treatment Options	Total Impact in the Absence of Neonicotinoid Treatment Options (in 000s)
Mid-South acres impacted (2.5 bu/acre loss)	4,378	$274	$23	$99,063
Midwest acres receiving one additional field pass with an alternative insecticide	14,539	$428	$4	$64,859
Midwest acres receiving two additional field passes with an alternative insecticide	1,094	$428	$16	$17,913
Remaining U.S. acres currently utilizing neonicotinoid seed treatments receiving one additional field pass with an alternative insecticide	7,337	$341	$4	$32,724
U.S. Total	27,349	$344[1,2]	$7.85[1]	$214,559

Numbers may not add due to rounding. Regional impacts calculated as the per-acre impact multiplied by the affected acreage. Average per acre impacts for the United States are calculated as the total impact divided by the total acres affected. See footnotes of Tables 3, 4, and 5 for additional information on calculations and data sources.
1 Represents average per acre estimates.
2 U.S. net operating revenue from Table 2.

Overall, across all soybean acres currently utilizing neonicotinoid-treated seed, impacts to soybean growers are expected to average less than $8 per acre (approximately 2.3% of net operating revenue). According to USDA NASS (2010-2014), the average total value of production across all soybean acres produced is $40.7 billion annually. Total industry impacts are expected to be at most $215 million or 0.53% of the average value of soybean production in the United States. This relatively small change is unlikely to result in price effects. However, as indicated by the study conducted by AgInfomatics (2014), an increase in price due to reductions in the supply of soybean would benefit growers at the expense of processors and consumers.

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It should be noted that across all scenarios, it is expected that the presented per acre impacts are likely overstated. First, permethrin seed treatments are registered and may offer equivalent efficacy to neonicotinoid seed treatments at a comparable price. Second, the pests being targeted by neonicotinoid seed treatments tend to occur sporadically and may not affect every soybean acre currently utilizing neonicotinoid-treated seed. Third, alternative practices such as higher seeding rates could reduce yield loss, albeit at the cost of extra seed. Finally, in the Midwest scenario, some growers may be able to apply an additional foliar insecticide as a tank mix with other chemicals, thus avoiding the cost associated with an additional field pass.

Input from National LGU experts and USDA-ARS

BEAD appreciates the constructive input offered by USDA-ARS, and Land-Grant-University (LGU) researchers and Extension experts from around the nation that have specific expertise in the production realities and pest control issues for soybeans. This includes the helpful questionnaire responses cited in the original analysis (which was coordinated by the North Central IPM Center) and the numerous comments submitted in response to the publication of BEAD's assessment.

While BEAD has been criticized by numerous commenters here and elsewhere for failing to reach out to growers, consultants, extension experts, registrants, state departments of agriculture, etc. for additional data and input into its original benefits assessment, the purpose of soliciting public comments on the draft assessment was to obtain input more broadly. Furthermore, BEAD re-iterates that LGU experts constitute a group that is both in close contact with all of the above listed stakeholders and is the most likely group to have objective evidence to support a benefits assessment. LGU experts are in close contact with growers and understand, particularly on a regionally specific basis, the major production and pest management concerns of growers making use of neonicotinoid seed treatments. LGU experts also collaborate closely with registrants and the pesticide industry to develop field plot data that independently evaluates the efficacy of numerous agrochemical products. LGU experts routinely interact with state and federal regulatory agencies. LGU experts are on the cutting edge of the latest advancements in knowledge of insect biology, agro-ecology, and pest management science, and it is generally their goal to synthesize their research results, their knowledge of external factors, and their regionally specific knowledge of production/economic realities, into science-based publications, recommendations, and expert input and disseminate current, peer-reviewed, science-based information on the usage of pesticides in agriculture.

BEAD therefore places a strong emphasis on the input from this group with regard to the methodology and conclusions from our analyses. BEAD notes here that on the whole, the consortia of LGU experts that signed onto two letters submitted as comments to BEAD's assessment, while offering constructive criticism on methodology and regional differences, were largely supportive of BEAD's overall conclusions on neonicotinoid seed treatment benefits for soybeans. LGU experts were also largely skeptical of the need for area-wide prophylactic seed treatment usage, particularly for areas such as the upper-Midwest and the eastern United States where incidence of soil-dwelling insect pests are generally low and only rarely occur at levels that cause economic damage. Finally, these commenters were in near unanimous agreement that

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while seed treatments serve a very valuable pest management function, their actual benefits to growers are likely to be sporadic, non-uniform, and clustered in areas with known incidents of high pest pressure and/or presence of BPMV, and that on the whole, when viewed nationally, benefits for most growers were indeed likely to be low.

CONCLUSIONS:

BEAD is in agreement with numerous commenters that its original analysis on the benefits of neonicotinoid insecticide seed treatments on soybeans did not adequately capture regional differences. BEAD has sought herein to address these criticisms and has reassessed the impacts for regions where usage of neonicotinoid seed treatments is likely to have benefits that are higher than what was estimated for the United States, on average. Based upon the totality of comments, including those from USDA-ARS and numerous LGU experts, BEAD concludes that the benefits of neonicotinoid seed treatments on soybeans can vary considerably by region. The benefits of neonicotinoid seed treatments on soybeans, in comparison to other available pest control practices, are expected to be low for most soybean growers in the United States. However, in situations where pest pressure is known and expected to be high, such as the mid-South, neonicotinoid seed treatments provide better and less costly control than alternative practices.

BEAD's original assessment (Myers and Hill, 2014) estimated that, on average, soybean growers that are currently utilizing neonicotinoid-treated seed could realize up to a $6 per acre benefit (1.7% of net operating revenue) in comparison to the use of foliar applications of alternative pesticides. For most growers, BEAD concluded that foliar applications of alternative pesticides are as cost-effective as neonicotinoid seed treatments. However, BEAD acknowledged that there could be regional differences and that neonicotinoid seed treatments may provide benefits to some growers, particularly in the Southeast of the United States. The total value of neonicotinoid seed treatments was estimated to be $52 million per year.

BEAD's revised assessment now estimates an average benefit across the 27 million soybean acreage planted with neonicotinoid treated seed to be less than $8 per acre (2.3% of the net operating revenue). Soybean growers in the Mid-South obtain benefits of as much as $23 per acre (8.4% of net operating revenue). BEAD estimates national impacts to be at most $215 million or 0.53% of the average value of soybean production in the United States.

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APPENDIX I. PUBLIC COMMENT RESPONSE REFERENCE TABLE. Public comments received by EPA in response to BEAD's Benefits of Neonicotinoid Seed Treatments to Soybean Production [Docket ID: EPA-HQ-OPP-2014-0737] that are not specifically cited, but have been addressed in Section I or II of this document. Comments addressed in Sections III and IV are specifically cited within the body or the document.

Generalized Comment and Response Location in Document (Section & Number)	Docket Comment Number (EPA-HQ-OPP-2014-0737-XXXX)	Synopsis of Generalized Comment
I.1	0006 0909 0917 0926 0934 0936 0928	BEAD's release of a benefit assessment prior to release of a risk assessment is unusual, improper, invalid, politically motivated, etc.
I.2	0785 0789	BEAD did not follow Presidential Guidance on scientific integrity.
I.3a	0011 0013 0017 0019 0033 0042 0069 0088 0141 0157 0165 0167 0168 0184 0192 0198 0244 0321 0334 0334 0789 0897 0934	Seed treatments pose lesser/fewer risks to pollinators and workers than foliar alternatives.
I.3b	0183 0293	Seed treatments have minimal off-site drift in comparison to foliar alternatives.

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Generalized Comment and Response Location in Document (Section & Number)	Docket Comment Number (EPA-HQ-OPP-2014-0737-XXXX)	Synopsis of Generalized Comment
I.3c	0004 0042 0108 0151 0157 0211 0232 0236 0245 0247 0251 0264 0265 0276 0285 0298 0302 0308 0315 0318 0319 0321 0338 0340 0682 0732 0739 0789 0911 0917	BEAD did not discuss risks of neonicotinoid seed treatments and their alternatives.

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Generalized Comment and Response Location in Document (Section & Number)	Docket Comment Number (EPA-HQ-OPP-2014-0737-XXXX)	Synopsis of Generalized Comment
I.3d	0004 0011 0013 0019 0033 0042 0062 0096 0116 0121 0283 0353 0732 0868 0934 0935	BEAD should incorporate environmental costs and benefits (i.e., value of ecosystem services) and also more specifically, should take the yield benefits of bee pollination into account with our benefit assessment.
I.3e	0053 0114 0117 0189 0208 0216 0283 0303 0306	Seed treatments allow for early planting into cool and/or wet soils.
I.3f	0012 0013 0041 0088 0094 0126 0223	Seed treatments preclude the need for foliar sprays.
I.3g	0029 0037	Seed treatments preclude the need for soybean re-planting.
I.3h	0094 0120 0361	Seed treatments allow for reduced tillage systems to be effective.

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Generalized Comment and Response Location in Document (Section & Number)	Docket Comment Number (EPA-HQ-OPP-2014-0737-XXXX)	Synopsis of Generalized Comment
I.3i	0017 0069 0079 0141 0165 0168 0184 0190 0244 0334	Seed treatments confer increased convenience.
I.3j	0897	Seed treatments provide jobs in the seed treatment sector.
I.4	0019 0105	The high adoption rates of seed treatments are themselves indicative of benefits; i.e., If growers didn't see real benefits from use of seed treatments, they wouldn't use them on such a large scale.

Generalized Comment and Response Location in Document (Section & Number)	Docket Comment Number (EPA-HQ-OPP-2014-0737-XXXX)	Synopsis of Generalized Comment
I.5	0006 0007 0024 0033 0036 0041 0053 0062 0094 0120 0125 0126 0138 0139 0151 0168 0171 0181 0193 0196 0243 0269 0280 0282 0283 0290 0291	Neonicotinoid seed treatments are the only viable option for controlling soil pests in soybeans, which are very difficult to scout and are often sporadic in occurrence/economic importance. This was particularly emphasized for soybeans in the Mid-South U.S., due to various agronomic factors occurring in that growing region.

Generalized Comment and Response Location in Document (Section & Number)	Docket Comment Number (EPA-HQ-OPP-2014-0737-XXXX)	Synopsis of Generalized Comment
I.5 (cont.)	0292 0294 0297 0297 0326 0335 0336 0348 0361 0567 0696 0741 0899 0901 0917	Neonicotinoid seed treatments are the only viable option for controlling soil pests in soybeans, which are very difficult to scout and are often sporadic in occurrence/economic importance. This was particularly emphasized for soybeans in the Mid-South U.S., due to various agronomic factors occurring in that growing region.
I.6	0209 0899	Prophylactic applications are not a favorable approach for integrated pest management (IPM).
I.7	0123	Prophylactic pest control tactics can be a legitimate and useful tactic within a larger integrated pest management (IPM) framework, and just because target pest populations aren't always known at the time of planting, does not mean that seed treatments are unnecessary or without benefits.

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Generalized Comment and Response Location in Document (Section & Number)	Docket Comment Number (EPA-HQ-OPP-2014-0737-XXXX)	Synopsis of Generalized Comment
I.7	0015 0026 0027 0030 0034 0043 0050 0075 0086 0301 0309 0344 0350 0352 0354 0789 0862 0910 0911 0914 0915 0917 0919 0924 0936	BEAD was too selective and narrowly focused in their data analyses and did not take into account data on benefits from registrants and the contracted analysis done by AgInfomatics.

Generalized Comment and Response Location in Document (Section & Number)	Docket Comment Number (EPA-HQ-OPP-2014-0737-XXXX)	Synopsis of Generalized Comment
I.8a	0018 0020 0022 0023 0024 0037 0048 0052 0058 0072 0074 0077 0077 0092 0099 0119 0121 0122 0123 0166 0192 0211 0220 0228 0233 0263 0308 0348 0349 0741 0777 0897 0901 0905	Numerous anecdotal submissions were cited where growers, contract researchers, etc. provided estimates of benefit based on unpublished data, personal experience, etc., including claims of ~5-33% yield protection from use of seed treatments.
I.8b	0004 0242 0868	Numerous anecdotal submissions were cited where growers, contract researchers, etc. claimed that there are no benefits of seed treatment usage, based on unpublished data, personal experience, etc.

Generalized Comment and Response Location in Document (Section & Number)	Docket Comment Number (EPA-HQ-OPP-2014-0737-XXXX)	Synopsis of Generalized Comment
I.9	0009 0269 0347 0868 0900 0909 0910 0911 0935	Numerous comments offered a general defense and broadly defined benefit descriptions for neonicotinoid on other crops and argued generally for the value of growers having multiple options in their respective pest management tool boxes for control of insect pests on agronomic and specialty crops.
I.10	0345 0868 0910	BEAD should release reviews for other crops, especially corn and canola.
I.11	0868 0935	BEAD should not wait for the registration review process to proceed before conducting benefit analyses for neonicotinoid use on other crops and OPP should not wait to take regulatory action on the neonicotinoids, based upon established risks.
I.12	899	BEAD's interpretation of the "no pest answer" response in EPA's proprietary usage data is flawed and is not an accurate reflection of grower intent, since multiple and sometimes unknown pests are known to drive the need for this technology.
I.13	0216 0228 0305 0313 0315 0322 0334 0340 0924	BEAD's scope of inquiry was too narrow and BEAD should have discussed the costs and benefits of alternatives.
II.1	0305	The Center for Food Safety submitted a coordinated response with other stakeholders and other NGO submissions argue that we have overstated the benefits of soybean seed treatments, that submitted registrant data is flawed, and that EPA should warn growers that seed treatments can negatively impact yield.

Generalized Comment and Response Location in Document (Section & Number)	Docket Comment Number (EPA-HQ-OPP-2014-0737-XXXX)	Synopsis of Generalized Comment
II.2	0011 0013 0017 0019 0033 0042 0069 0088 0141 0157 0165 0167 0168 0184 0192 0198 0244 0321 0334 0334 0789 0897 0934	Recent studies with regard to the lack of benefits of seed treatments for control of soybean aphids, and that tri-trophic disruptions and the resultant usage of foliar insecticides pose an additional risk to pollinators.
II.3	0315 0348 0734	Comments related to the particular pest management needs of the Mississippi Delta growing region, with accompanying citation of a draft meta-analysis of seed treatment yield impacts for mid-south soybeans.
II.4	0340	Several commenters discussed the important benefit of preventing transmission of the bean pod mottle virus (BPMV) which is vectored by the bean leaf beetle (BLB). Citations were provided discussing the importance of this factor and it was noted that control of the adult overwintering generation is key to stopping transmission of this virus by providing an early season mitigation of BLB populations. This, can often preclude the need for later foliar treatment of subsequent BLB generations.

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Message

From: Jackson, Ryan [jackson.ryan@epa.gov]
Sent: 11/22/2017 3:05:29 PM
To: Sands, Jeffrey [sands.jeffrey@epa.gov]; Beck, Nancy [Beck.Nancy@epa.gov]; Bennett, Tate [Bennett.Tate@epa.gov]; Baptist, Erik [baptist.erik@epa.gov]; Ferguson, Lincoln [ferguson.lincoln@epa.gov]
Subject: RE: Revised One-Pager
Attachments: Worker Protection Standard-CT_one pager.docx

Ex. 5 Deliberative Process (DP)

This is a good briefer and provides a good direction for talking points on both. Let's continue to use this and update it with everyone on this email. Please let OP know that this is the direction on these rules. Thanks.

From: Sands, Jeffrey
Sent: Wednesday, November 22, 2017 9:15 AM
To: Beck, Nancy <Beck.Nancy@epa.gov>; Bennett, Tate <Bennett.Tate@epa.gov>; Baptist, Erik <baptist.erik@epa.gov>; Jackson, Ryan <jackson.ryan@epa.gov>
Subject: RE: Revised One-Pager

INTERNAL STAFF DELIBERATIVE

All,

Attached please find edited one-pager. Erik, this is inclusive of your suggestions offered last night with the exception of Ex. 5 Deliberative Process (DP) Nancy can elaborate if needed.

Thanks

From: Beck, Nancy
Sent: Tuesday, November 21, 2017 7:08 PM
To: Sands, Jeffrey <sands.jeffrey@epa.gov>; Bennett, Tate <Bennett.Tate@epa.gov>; Baptist, Erik <baptist.erik@epa.gov>
Subject: RE: Revised One-Pager

INTERNAL STAFF DELIBERATIVE

Thanks Jeff—
This looks good. I have one suggestion in the attached to clarify.

Ex. 5 Deliberative Process (DP)

Make sense?

Nancy

Nancy B. Beck, Ph.D., DABT
Deputy Assistant Administrator, OCSPP
P: 202-564-1273
M: Ex. 6
beck.nancy@epa.gov

From: Sands, Jeffrey
Sent: Tuesday, November 21, 2017 3:53 PM
To: Beck, Nancy <Beck.Nancy@epa.gov>; Bennett, Tate <Bennett.Tate@epa.gov>; Baptist, Erik <baptist.erik@epa.gov>
Subject: Revised One-Pager

Hello all,

Please see revised one-pager from our meeting yesterday. I would appreciate your feedback as well as any details that have been missed here in approach, specific formatting/wording, or otherwise.

Jeffrey Sands
Senior Advisor to the Administrator for Agriculture Policy
1200 Pennsylvania Ave, NW
2415 WJC North
Washington, DC 20460
(202) 564-2263

Message

From: Baptist, Erik [baptist.erik@epa.gov]
Sent: 11/22/2017 1:06:44 AM
To: Beck, Nancy [Beck.Nancy@epa.gov]; Sands, Jeffrey [sands.jeffrey@epa.gov]; Bennett, Tate [Bennett.Tate@epa.gov]
Subject: RE: Revised One-Pager
Attachments: Worker Protection Standard-CT_one pager.2.docx

Attached please find my suggested edits and comments. Happy to discuss.

Erik Baptist
Senior Deputy General Counsel
Office of General Counsel
U.S. Environmental Protection Agency
1200 Pennsyvlania Ave., NW
Washington, DC 20460
(202) 564-1689
baptist.erik@epa.gov

From: Beck, Nancy
Sent: Tuesday, November 21, 2017 7:08 PM
To: Sands, Jeffrey <sands.jeffrey@epa.gov>; Bennett, Tate <Bennett.Tate@epa.gov>; Baptist, Erik <baptist.erik@epa.gov>
Subject: RE: Revised One-Pager

INTERNAL STAFF DELIBERATIVE

Thanks Jeff—
This looks good. I have one suggestion in the attached to clarify.

Ex. 5 Deliberative Process (DP)

Make sense?

Nancy

Nancy B. Beck, Ph.D., DABT
Deputy Assistant Administrator, OCSPP
P: 202-564-1273
M: Ex. 6
beck.nancy@epa.gov

From: Sands, Jeffrey
Sent: Tuesday, November 21, 2017 3:53 PM
To: Beck, Nancy <Beck.Nancy@epa.gov>; Bennett, Tate <Bennett.Tate@epa.gov>; Baptist, Erik <baptist.erik@epa.gov>
Subject: Revised One-Pager

Hello all,

Please see revised one-pager from our meeting yesterday. I would appreciate your feedback as well as any details that have been missed here in approach, specific formatting/wording, or otherwise.

Jeffrey Sands
Senior Advisor to the Administrator for Agriculture Policy
1200 Pennsylvania Ave, NW
2415 WJC North
Washington, DC 20460
(202) 564-2263

Message

From: Beck, Nancy [Beck.Nancy@epa.gov]
Sent: 11/22/2017 12:08:20 AM
To: Sands, Jeffrey [sands.jeffrey@epa.gov]; Bennett, Tate [Bennett.Tate@epa.gov]; Baptist, Erik [baptist.erik@epa.gov]
Subject: RE: Revised One-Pager
Attachments: Worker Protection Standard-CT_one pager.2.docx

INTERNAL STAFF DELIBERATIVE

Thanks Jeff—
This looks good. I have one suggestion in the attached to clarify.

Ex. 5 Deliberative Process (DP)

Make sense?

Nancy

Nancy B. Beck, Ph.D., DABT
Deputy Assistant Administrator, OCSPP
P: 202-564-1273
M: Ex. 6
beck.nancy@epa.gov

From: Sands, Jeffrey
Sent: Tuesday, November 21, 2017 3:53 PM
To: Beck, Nancy <Beck.Nancy@epa.gov>; Bennett, Tate <Bennett.Tate@epa.gov>; Baptist, Erik <baptist.erik@epa.gov>
Subject: Revised One-Pager

Hello all,

Please see revised one-pager from our meeting yesterday. I would appreciate your feedback as well as any details that have been missed here in approach, specific formatting/wording, or otherwise.

Jeffrey Sands
Senior Advisor to the Administrator for Agriculture Policy
1200 Pennsylvania Ave, NW
2415 WJC North
Washington, DC 20460
(202) 564-2263

Message

From: Brennan, Ross [Brennan.Ross@epa.gov]
Sent: 11/20/2017 7:05:37 PM
To: Ziobro, Joseph [Ziobro.Joseph@epa.gov]; kim@aginspirations.com; donp@fb.org; danielleq@fb.org; tom.hebert@bayardridge.com; Chad.Frahm@rosedmi.com; John.Monaghan@dairy.org; karen.scanlon@dairy.org; syager@beef.org; apeterson@chickenusa.org; kbillings@ncfc.org; lvandoren@ncfc.org; cdetlefsen@nmpf.org; Michael Formica [formicam@nppc.org]; dwells@turkeyfed.org; cgarrison@garrisongroup.com; pbredwell@poultryegg.org; crichter@thepolicygroup.com; Ex. 6 kwesterbeek@smithfield.com; cal@creightonbrothersllc.com; billk@cooperfarms.com; jamie.burr@tyson.com; cousercattle@iowatelecom.net; iowariverranch@heartofiowa.net; tom.mcdonald@jbssa.com; rholladay@cmfoods.com; tmbass@montana.edu; mrisse@uga.edu; Glenn Carpenter [glenn.carpenter@wdc.usda.gov]; gary.kelman@maryland.gov; Woodmansey, Kent [Kent.Woodmansey@state.sd.us]; Ferris, Lena [Ferris.Lena@epa.gov]; Sawyers, Andrew [Sawyers.Andrew@epa.gov]; Brennan, Ross [Brennan.Ross@epa.gov]; Molloy, Jennifer [molloy.jennifer@epa.gov]; Jones, Kristin [jones.kristin@epa.gov]; Best-Wong, Benita [Best-Wong.Benita@epa.gov]; Wall, Tom [Wall.Tom@epa.gov]; Pollins, Mark [Pollins.Mark@epa.gov]; Theis, Joseph [Theis.Joseph@epa.gov]; Shenk, Kelly [shenk.kelly@epa.gov]; Robertson, Duane [Robertson.Duane@epa.gov]; Winn, G. Dean [winn.gerald@epa.gov]; Socha, Julianne [socha.julianne@epa.gov]; Burdett, Cheryl [burdett.cheryl@epa.gov]; Rush, Randall [Rush.Randall@epa.gov]; Saunders, Jerry [Saunders.Jerry@epa.gov]; Hamilton, Denise [Hamilton.Denise@epa.gov]; Cooper, WilliamF [Cooper.WilliamF@epa.gov]; Galloway, Carol [Galloway.Carol@epa.gov]; Perrin, Rebecca [Perrin.Rebecca@epa.gov]; Miller, Amy [Miller.Amy@epa.gov]; Mitschele, Becky [Mitschele.Becky@epa.gov]; Peak, Nicholas [Peak.Nicholas@epa.gov]; bhammerich@coloradolivestock.org; Winnett, Steven [winnett.steven@epa.gov]; Heinemann, Kristina [Heinemann.Kristina@epa.gov]; Flournoy, Karen [Flournoy.Karen@epa.gov]; Hall, Lynda [Hall.Lynda@epa.gov]; Larsen, Erika [Larsen.Erika@epa.gov]; Mortensen, Ginah [mortensen.ginah@epa.gov]; Greg Zwicke [greg.zwicke@ftc.usda.gov]; mhart@beef.org; LUEHE, DOUGLAS [luehe.douglas@epa.gov]; aneuhart@BrwnCald.com; MSponsler@coloradocorn.com; justin.miller@jbssa.com; brad.lubbers@jbssa.com; ben@tcfa.org; empiredairy@me.com; jslutsky@lalunadairy.com; Means, Sandy - NRCS, Greensboro, NC [Sandy.Means@gnb.usda.gov]; lisa.devore@state.co.us; Sands, Jeffrey [sands.jeffrey@epa.gov]; jim_cheatham@nps.gov; Jimmy.Bramblett@wdc.usda.gov; Hosch, Claudia [hosch.claudia@epa.gov]
CC: Paul Bredwell [pbredwell@uspoultry.org]; Frahm, Chad [Chad.Frahm@dairy.org]; Hou, James [Hou.James@epa.gov]; Ismert, Peter [Ismert.Peter@epa.gov]; Chad DeVolin [chad.devolin@state.co.us]; Magruder, DeMara [Magruder.Demara@epa.gov]; Denton, Loren [Denton.Loren@epa.gov]; Ex. 6 Ashley McDonald [amcdonald@beef.org]; Zobrist, Marcus [Zobrist.Marcus@epa.gov]; Nitsch, Chad [Nitsch.Chad@epa.gov]; jeffrey.porter@gnb.usda.gov; jayolsen@utah.gov; Sharpe, Kristinn [Sharpe.Kristinn@epa.gov]; Corona, Elizabeth [Corona.Elizabeth@epa.gov]; Jill Heemstra [jill.heemstra@unl.edu]; Rathbone, Colleen [Rathbone.Colleen@epa.gov]; Gioffre, Patricia [Gioffre.Patricia@epa.gov]; Jennings, Kim [Jennings.Kim@epa.gov]; Greenwald, Kathryn [Greenwald.Kathryn@epa.gov]; Rise, David [rise.david@epa.gov]; Bahk, Benjamin [Bahk.Benjamin@epa.gov]
Subject: Presentation materials from October 23-25 AADG meeting
Attachments: AADG - Oct 2017 Mtg - 9. Breakout - Next Steps.pdf; AADG - Oct 2017 Mtg - 1. Final Agenda.pdf; AADG - Oct 2017 Mtg - 2. Participants List.pdf; AADG - Oct 2017 Mtg - 3. CO Monitoring Framework.pdf; AADG - Oct 2017 Mtg - 4. RMNP Air Quality Initiative.pdf; AADG - Oct 2017 Mtg - 5. Ag Educ Project Update.pdf; AADG - Oct 2017 Mtg - 6. Nutrient Recycling Challenge Update.pdf; AADG - Oct 2017 Mtg - 7. EPA compliance monitoring prog.pdf; AADG - Oct 2017 Mtg - 8. USRSB Update.pdf

It was a pleasure to see everyone in Denver. As Hema Subramanian mentioned in her October 26 email, I am forwarding copies of the presentation materials from that meeting.

We'll follow up shortly with remaining materials.

Ross Brennan
Acting Chief, Rural Branch
EPA Office of Wastewater Management
(202) 564-3248

Animal Agriculture Discussion Group
October 23-25, 2017 Meeting
Denver Area, Colorado
Agenda and Logistical Information *(Final)*

Meeting and Hotel Location:

Doubletree by Hilton Hotel Denver
3203 Quebec St., Denver, CO 80207
Grand Ballroom I
Website
Map

Note: There are multiple DoubleTree hotels in close proximity on this same road. Be sure to use the street address to identify the correct location: **3203 Quebec St., Denver, CO 80207**.

Transportation from Airport:

Train – The RTD University of Colorado A Line train runs from Denver Airport to Central Park Station for $9 each way, and the hotel provides a complimentary shuttle from the station (call the hotel at 303-321-3333 when you arrive at the platform to request shuttle).
Info at: http://www.rtd-denver.com/a-line.shtml

Uber - $23-30 each way; ***Taxi*** - Approximately $55 each way

Dress Code: Business casual for the meetings Monday and Tuesday. Outdoor-friendly clothes (boots, jacket/layers, etc.) for the farm tours on Wednesday.

Meals/Refreshments:

Per federal policies, please note that EPA is restricted from providing refreshments for this meeting. However, the hotel has cafés and restaurants with food and beverages available for purchase, both onsite and within walking distance.

Breakfasts and Mon/Tue lunches will be on your own.

Boxed lunches have been pre-ordered to be catered on Wednesday during the tour; federal employees should bring cash to cover the cost of their lunches on this day (amount will be announced).

An optional networking dinner will be located at the Berkshire Restaurant on Tuesday evening, within 10 minutes walking distance of the hotel. The restaurant is offering a special/limited menu for our dinner, which is attached to the calendar invitation.

Onsite Contacts:

Kelly Shenk, Agricultural Advisor, EPA Region 4: shenk.kelly@epa.gov, (cell) Ex. 6
Ross Brennan, Acting Chief of EPA Rural Branch: Brennan.ross@epa.gov, (cell) Ex. 6

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Webcast Information (for 10/23 and 10/24):

Link: Ex. 6

Phone Conference Line for Audio: Dial Ex. 6 Passcode Ex. 6

Adobe Connect Webcast Instructions

Use this link to access visual presentations: Ex. 6

Audio will be available only by phone conference line: **Dial** Ex. 6 **Passcode** Ex. 6

If you have never attended an Adobe Connect meeting before:

Test your connection: http://epawebconferencing.acms.com/common/help/en/support/meeting_test.htm
Get a quick overview: http://www.adobe.com/products/adobeconnect.html

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Final Agenda

Monday, October 23 - MEETING, DAY 1

Morning flights in, lunch on your own

1:30 pm 2:00 – 2:15 pm	Arrivals (Grand Ballroom I) **Introductions**
2:15 – 2:40 pm	**Welcome, Preliminary Remarks** - *Doug Benevento, EPA R8 Regional Administrator (tentative)* - *Don Brown, Colorado Department of Agriculture Commissioner*
2:40 – 2:50 pm	**Vision for the Meeting, General Updates, Announcements** - *Hema Subramanian, EPA Water Permits Division/Rural Branch*
2:50 – 3:30 pm	**Regional Spotlight: Animal Agriculture and Collaboration in Colorado** • **Colorado Monitoring Framework - Agricultural Task Force** http://coloradolivestock.org/agricultural-task-force/ - *Andrew Neuhart, Brown and Caldwell and Mark Sponsler, Colorado Corn*
3:30 – 3:40 pm	*Break*
3:40 – 4:40 pm	• **Rocky Mountain National Park Initiative** https://www.nature.nps.gov/air/Permits/ARIS/docs/romoNFactSheetV11200505Final.pdf http://www.rmwarmingsystem.com/ - *Bill Hammerich, Colorado Livestock Association* - *James Hou, EPA Region 8 Air Program* - *Justin Miller, JBS Five Rivers Cattle Feeding* - *John Slutsky, La Luna Dairy* - *Lisa Devore, Colorado Department of Public Health and Environment*
4:40 – 5:15 pm	***What can we learn from these local/regional models that could help inform the direction of the AADG?*** - *Discussion led by Kelly Shenk, EPA Region 3 Agricultural Advisor*
5:15 – 5:30 pm	**Re-cap, Wrap up, and Logistics Ahead** - *Hema Subramanian, EPA Water Permits Division/Rural Branch*

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Tuesday, October 24th - MEETING, DAY 2

8:15 – 8:30 am	**Welcome back** - *Remarks by Andrew Sawyers, EPA Office of Wastewater Management Director and Marcus Zobrist, EPA Office of Wastewater Management - Water Permits Division Acting Director* - *Introduction of Jeffrey Sands, EPA Senior Advisor to the Administrator for Agriculture Policy*
8:30 – 8:45 am	**EPA Agency Updates**
8:45 – 9:00 am	**EPA's Smart Sectors Program** https://www.epa.gov/smartsectors - *Kristinn Sharpe, EPA Office of Policy, Smart Sectors, Agriculture Lead* - *Elizabeth Corona, EPA Office of Policy, Smart Sectors, Agriculture Backup Lead*
9:00 – 9:15 am 9:15 – 10:00 am	**Updates on Ongoing Collaborations** • **Animal Ag Education Project** ○ **Updates since launch of EPA Overview Module** Website: https://articles.extension.org/pages/73649/animal-agriculture-manure-management-and-water-quality - *Kelly Shenk, EPA Region 3 Agricultural Advisor* ○ **NRCS module preview and discussion** Links to draft module *(please do not share yet beyond this group)*: Section 1: https://articles.extension.org/preview/page/create/102424 Section 2: https://articles.extension.org/preview/page/create/102577 - *Glenn Carpenter, USDA NRCS Animal Husbandry National Leader*
10:00 – 10:10 am	*Break*
10:10 – 10:30 am 10:30 – 11:00 am 11:00 – 11:15 am	○ **National Cattlemen's Beef Association's module preview and discussion** - *Scott Yager, National Cattlemen's Beef Association* ○ **U.S. Poultry & Egg Inspection/Conservation module preview and discussion** - *Paul Bredwell, U.S. Poultry & Egg Association* ○ **Next steps for the Animal Ag Education Project**

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11:15 – 11:45 am	• **Nutrient Recycling Challenge update** - *Joseph Ziobro, Hema Subramanian, and Kristin Jones, EPA Water Permits Division/Rural Branch*
11:45 – 1:15 pm	*Lunch on your own*
1:15 – 2:30 pm	**Findings from EPA and State Water Quality Permitting Inspections** - *Carol Galloway, EPA Office of Compliance and National Agriculture Center*
2:30 – 3:00 pm 3:00– 3:20 pm	**Industry-led sustainability initiatives** • **Featured initiative: U.S. Roundtable on Sustainable Beef** https://www.usrsb.org/ - *Ashley McDonald, National Cattlemen's Beef Association* **Brief updates on other industry sustainability initiatives**
3:20 – 3:30 pm	*Break*
3:30 – 5:00 pm	**Working session on next steps for the AADG, ways to build on its success** • Breakout discussions (45 mins) – *webcast will break* • Re-convene to map out vision (45 mins) – *webcast will resume*
5:00 – 5:15 pm	**Wrap-up, Takeaways, Action Items** **Closing Remarks, Adjourn**
6:00 – 7:30 pm	*Optional networking dinner* **The Berkshire** 7352 29th Ave. Denver, CO 80238 Directions: Walk 0.3 miles south on Quebec St. from the hotel, turn left on 29th St. Restaurant will be on the right.

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Wednesday, October 25th – TOUR DAY

(There will be no webcast for this day.)

7:15 am	**Board bus, travel to Empire Dairy**
9:00 – 10:30 am	**Empire Dairy** Wiggins, CO
10:30 – 11:00	**Travel to JBS/Five Rivers**
11:00 am – 1:30 pm	**JBS/Five Rivers Cattle Feeding** Kersey, CO *Boxed lunches will be provided onsite.*
3:00 pm	**Arrive back at hotel**

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Animal Agriculture Discussion Group
October 23-25, 2017 Meeting
Denver Area, Colorado
Participants List

TOTALS				48
First Name	**Last Name**	**Affiliation**	**New/ Guest**	**Attended**
		Ag Associations/National Orgs		**6**
Kim	Bremmer	American Agri-Women		
Don	Parrish	American Farm Bureau Federation		
Danielle	Quist	American Farm Bureau Federation		
Tom	Hebert	Bayard Ridge Group		P
Chad	Frahm	Innovation Center for U.S. Dairy / Dairy Management Inc.		
John	Monaghan	Innovation Center for U.S. Dairy / Dairy Management Inc.		
Karen	Scanlon	Innovation Center for U.S. Dairy / Dairy Management Inc.		Y
Scott	Yager	National Cattlemen's Beef Association		Y
Mary Thomas	Hart	National Cattlemen’s Beef Association		Y
Ashley	McDonald	National Cattlemen's Beef Association	Guest	Y
Ashley	Peterson	National Chicken Council		
Kelsey	Billings	National Council of Farmer Cooperatives		
Lisa	Van Doren	National Council of Farmer Cooperatives		
Clay	Detlefsen	National Milk Producers Federation		
Michael	Formica	National Pork Producers Council		
Damon	Wells	National Turkey Federation		
Charlie	Garrison	The Garrison Group, LLC		
Paul	Bredwell	U.S. Poultry and Egg Association		Y
Christian	Richter	The Policy Group		Y
Steve	George	United Egg Producers		
David	Inall	United Egg Producers		
		Producers/Local Contacts		**11**
Doug	Young	Spruce Haven Farm (NY)		
Kraig	Westerbeek	Smithfield (NC)		
Cal	Jackson	Creighton Brothers (IN)		
Bill	Knapke	Cooper Farms (OH)		Y
Jamie	Burr	Tyson Foods (AR)		Y
Bill	Couser	Couser Cattle Co. (IA)		Y

First Name	Last Name	Affiliation	New/ Guest	Attended
Dave	Petty	Iowa River Ranch (IA)		Y
Tom	McDonald	JBS Five Rivers Cattle Feeding LLC (TX)		Y
Justin	Miller	JBS Five Rivers Cattle Feeding LLC (CO)	Guest	Y
Brad	Lubbers	JBS Five Rivers Cattle Feeding LLC (CO)	Guest	Y
Ben	Weinheimer	Texas Cattle Feeders Association	Guest	Y
Bill	Hammerich	Colorado Livestock Association	Guest	Y
Rob	Holladay	Cal-Maine Foods, Inc. (MS)		P
Norm	Dinis	Empire Dairy (CO)	Guest	Y
Jon	Slutskey	La Luna Dairy, Inc. (CO)	Guest	Y
		Academia		**0**
Thomas	Bass	Montana State University Extension		
Mark	Risse	University of Georgia		
Jill	Heemstra	University of Nebraska Extension/Livestock and Poultry Environmental Learning Center	Guest	P
		USDA		**3**
Rafael	Guerrero	USDA NRCS, Deputy Chief for Science & Technology	New	
Glenn	Carpenter	USDA NRCS, Animal Husbandry National Leader		Y
Jeff	Porter	USDA NRCS, Animal Manure and Nutrient Management Team Leader	Guest	
Sandra	Means	USDA NRCS	Guest	Y
Greg	Zwicke	Colorado NRCS, Air Quality Engineer	Guest	Y
		States		**4**
Gary	Kelman	Maryland Dept. of the Environment		
Kent	Woodmansey	South Dakota Dept. of Environment & Natural Resources		
Chad	DeVolin	Colorado Department of Public Health and Environment - Environmental Agriculture, Program Coordinator	Guest	Y
Lisa	Devore	Colorado Department of Public Health and Environment	Guest	Y
Don	Brown	Colorado Department of Agriculture, Commissioner	Guest	Y
Jay	Olsen	Utah Department of Agriculture and Food	Guest	Y
		EPA Headquarters		**9**
Jeffrey	Sands	Office of the Administrator, Senior Advisor to the Administrator for Agriculture Policy	New	Y
Lena	Ferris	Office of the Administrator, Designated Federal Officer to the Farm, Ranch, and Rural Communities Federal Advisory Committee		

First Name	Last Name	Affiliation	New/ Guest	Attended
Chad	Nitsch	Office of the Administrator, Intergovernmental Relations | State and Regional Partnerships	New	P
Benita	Best-Wong	Office of Water, Acting Principal Deputy Assistant Administrator		
Andrew	Sawyers	Office of Water, Office of Wastewater Management, Director		Y
Marcus	Zobrist	Office of Water, Office of Wastewater Management, Water Permits Division, Acting Director	New	Y
Ross	Brennan	Office of Water, Office of Wastewater Management, Water Permits Division, Rural Branch, Acting Chief		Y
Jenny	Molloy	Office of Water, Office of Wastewater Management, Water Permits Division, Environmental Protection Specialist		P
Hema	Subramanian	Office of Water, Office of Wastewater Management, Water Permits Division, Environmental Protection Specialist		Y
Joseph	Ziobro	Office of Water, Office of Wastewater Management, Water Permits Division, Physical Scientist		Y
Kristin	Jones	Office of Water, Office of Wastewater Management, Water Permits Division, ORISE Participant		
Tom	Wall	Office of Water, Office of Wetlands, Oceans, & Watersheds, Assessment & Watershed Protection Division, Director		P
Mark	Pollins	Office of Enforcement & Compliance Assurance, Water Enforcement Division, Director		
Joe	Theis	Office of Enforcement & Compliance Assurance, Water Enforcement Division, Assoc. Director		
Loren	Denton	Office of Enforcement and Compliance Assurance, Water Enforcement Division, Acting Associate Director	New	
Kathy	Greenwald	Office of Enforcement and Compliance Assurance, Water Enforcement Division	Guest	
Carol	Galloway	Office of Enforcement & Compliance Assurance, Office of Compliance, EPA National Agriculture Center		Y
Ginah	Mortensen	Office of Enforcement & Compliance Assurance, Office of Compliance, EPA National Agriculture Center Director	New	P
		Office of Policy, Smart Sectors, Agriculture	New	
Kristinn	Sharpe	Office of Policy, Smart Sectors, Agriculture	New	Y
Elizabeth	Corona	Office of Policy, Smart Sectors, Agriculture	New	Y
		EPA Regions		**12**
Steven	Winnett	Region 1, Ag Advisor	New	Y

First Name	Last Name	Affiliation	New/ Guest	Attended
Kristina	Heinemann	Region 2, Ag Advisor	New	Y
Kelly	Shenk	Region 3, Ag Advisor, AADG Manager		Y
Duane	Robertson	Region 4, Ag. Coordinator	New	P
Gerald	Winn	Region 5, Acting Regional Ag Advisor	New	Y
Julianne	Socha	Region 5, Water Division, NPDES Programs Branch		
Cheryl	Burdett	Region 5, Water Enforcement, CAFO Program Manager		
Randy	Rush	Region 6, Ag AdvisorPolicy Advisor - Agriculture		
Jerry	Saunders	Region 6, Compliance Assurance & Enforcement Division, Water Enforcement Branch, Chief		
Denise	Hamilton	Region 6, Environmental Engineer		
William	Cooper	Region 6, Water Division	New	Y
Karen	Flournoy	Region 7, Ag Advisor	New	Y
Doug	Benevento	Region 8, Regional Administrator	Guest	Y
Rebecca	Perrin	Region 8, Ag Advisor		Y
Colleen	Rathbone	Region 8, Wastewater Unit, Chief		
David	Rise	Region 8, CAFOs, Montana Oversight		
James	Hou	Region 8, Air Program	Guest	Y
Peter	Ismert	Region 8, Environmental Scientist	Guest	Y
		Region 8, Office of Research & Development		
Becky	Mitschele	Region 9, NPDES Permits & Water, Ag Coordinator		Y
Doug	Luehe	Region 9, Acting Chief of Staff/Ag Advisor		
Nicholas	Peak	Region 10, Ag Advisor		Y
Other Guests				**3**
Andrew	Neuhart	Brown and Caldwell (Colorado Agricultural Task Force)	Guest	Y
Mark	Sponsler	Colorado Corn (Colorado Agricultural Task Force)	Guest	Y
Jim	Cheatham	National Park Service, Air Resources Division, Air Quality Specialist	Guest	Y

COLORADO MONITORING FRAMEWORK

Agriculture, Nutrients and Regulation

Ag Task Force Presentation

* Setting the Stage
* Framing the issue
* Who and why
* Current regulations
* Opportunities

Setting the Stage

EPA has made the development of nutrient criteria one of their highest priorities

Issues:

- Aquatic life
- Drinking water
- Recreation

Setting the Stage

Clean Water Act

- EPA delegates programs to States
  - ex: Permitting and Standards
- Retains approval authority

Water Quality Standards

- National Criteria set by EPA
- States can be more stringent

EPA has NOT adopted national criteria for nutrients

Setting the Stage

Colorado Nutrient Criteria

- Workgroup process in 2000's
- Nutrient criteria adopted in 2012
  - Regulation 31
  - Regulation 85

Framing the Issue

Water Quality Control Commission Workgroups

Point-Sources - WWTF's targeted

Finger pointing to Non-point sources

Golf courses and residential

Stormwater and AGRICULTURE

The *assumption* is that Ag runoff is a *major* source of *nutrients*

Framing the Issue

Prior to 2012, the WQCD – Reached out for engagement by the Ag Community

Formation of the CO Ag Producers Alliance and direct involvement from:

- Colorado Corn
- Colorado Livestock
- Colorado Wheat Growers

Who we are

Colorado Monitoring Framework -

- statewide nonprofit organization
- dealing with water quality regulations
- objective of creating a scientific, collaborative process
- share information and data so decisions can be made based on the best science available

Who we are

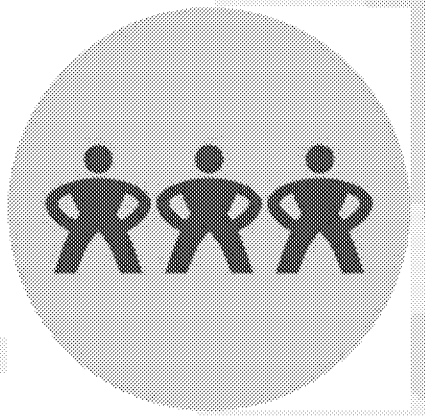
- The Ag Task Force is a subset of the CMF working solely on issues related to agriculture and nutrients

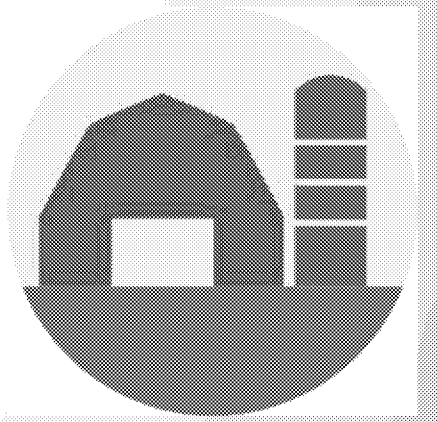
- Building relationships with:
  - Ag communities
  - Academia
  - Government entities

Who we are

Members and participants include:

- Colorado Livestock, Corn and Wheat Growers
- Colorado State University
- Ag consultants and professionals
- CO Department of Agriculture
- CO Ag Producers Alliance (14 members)
- CO Assoc of Conservation Districts
- Water Quality Control Division
- Municipalities and Industry

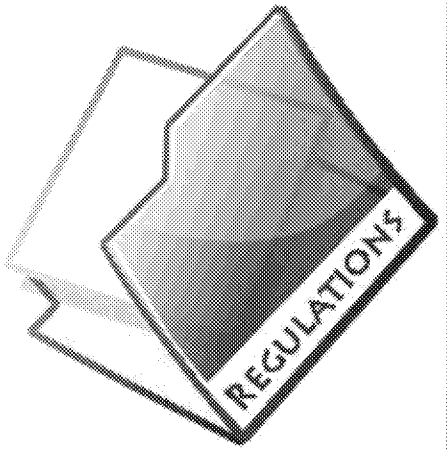




Regulation 85

Reg 85 is the first step:

- ✓ Mandatory controls on 44 largest point source discharges
- ✓ Voluntary controls for non-point source discharges
- ✓ Statewide monitoring to better define problem



So what's the problem???

Colorado Dept of Public Health and Env'nt

Water Quality Control Commission

REGULATION #85

NUTRIENTS MANAGEMENT CONTROL REGULATION

5 CCR 1002-85

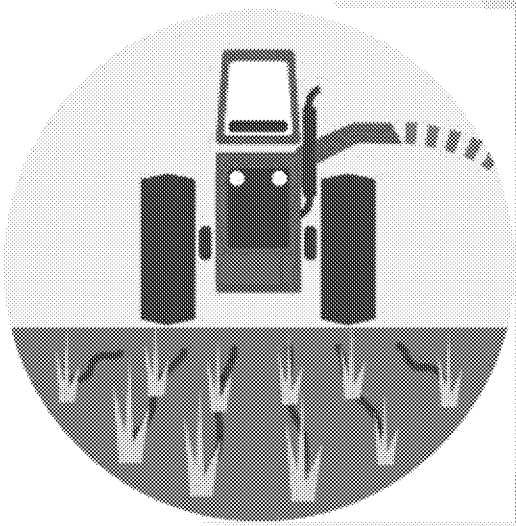
85.1 AUTHORITY

The Water Quality Control Commission is authorized by section 25-8-205 C.R.S., to promulgate control regulations to describe prohibitions, standards, concentrations, and effluent limitations on the extent of specifically identified pollutants that any person may discharge into **any** specific class of state waters.

Regulation 85

Reg 85 Triennial Reviews

Upcoming in 2017, 2020



What is being reviewed?

- Scope of the problem?
- Is progress being made?
- What are NPS doing?

Regulation 85

By 2022 – Decisions will be made

Are controls on agriculture necessary?

Your input IS needed!

Regulation 85

Decision 2022

- Yes - What will this look like?
- No - Free and Clear right?
- What about Reg 31?

Regulation 31

Reg 31 – Second Step:

Assigns standards to all waters

Delayed implementation dates

- Above WWTF:
  - TP (0.17 mg/L) being assigned now
  - TN (2.01 mg/L) currently in question
- Statewide in 2021

EPA "no action" on stream criteria

- Now what?

Regulation 31

Current workgroup process evaluating:

- Additional delay in Reg 31 values to 2027
- How to continue making process on nutrients

Still doesn't apply to Ag right?

- Reg 85 decision still set for 2022

Once standards are in place, streams will be assessed for compliance which may lead to 303(d) listings

- Impairment for P or N will lead to a TMDL – all sources are evaluated
- Ag producers could be assigned an allocation limiting P/N from their operation

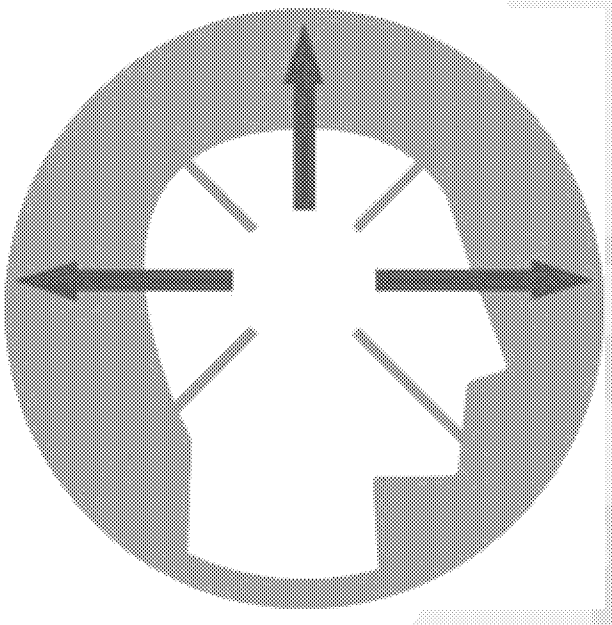
Perspectives

Colorado Livestock Association
Bill Hammerich

Colorado Corn
Mark Sponsler

Colorado Wheat Growers
Randy Traxler

Department of Agriculture
Cindy Lair



Opportunities

Ultimate goal is to inform the WQCC about existing nutrient controls so that they can make an informed decision about the need for regulation

Understand complex water quality issues

Collaborate through partnerships

Understand existing nutrient controls and their effectiveness

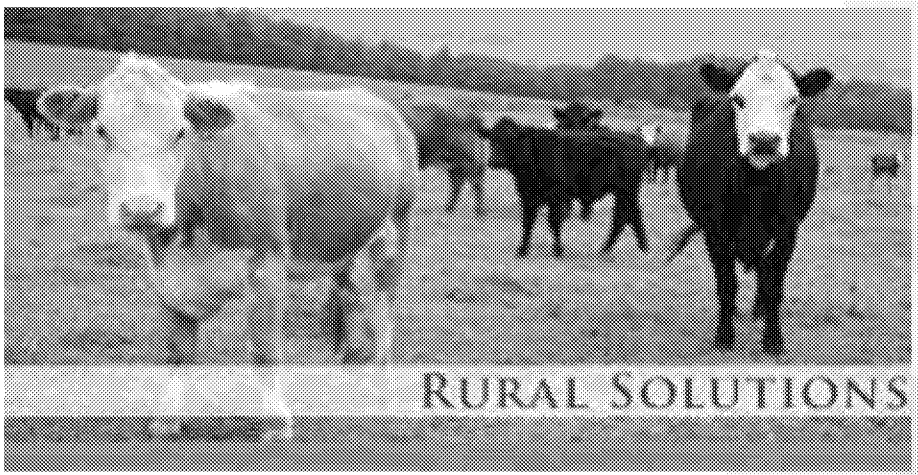
Share information

Opportunities

In order to provide accurate information we need your help

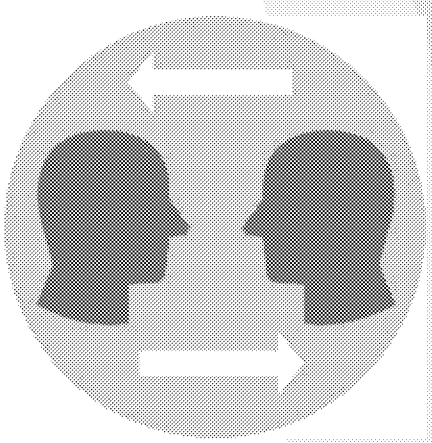
On a voluntary and confidential basis:

- Participate
- Investigate
- Educate
- Develop relationships
- Share information



Opportunities

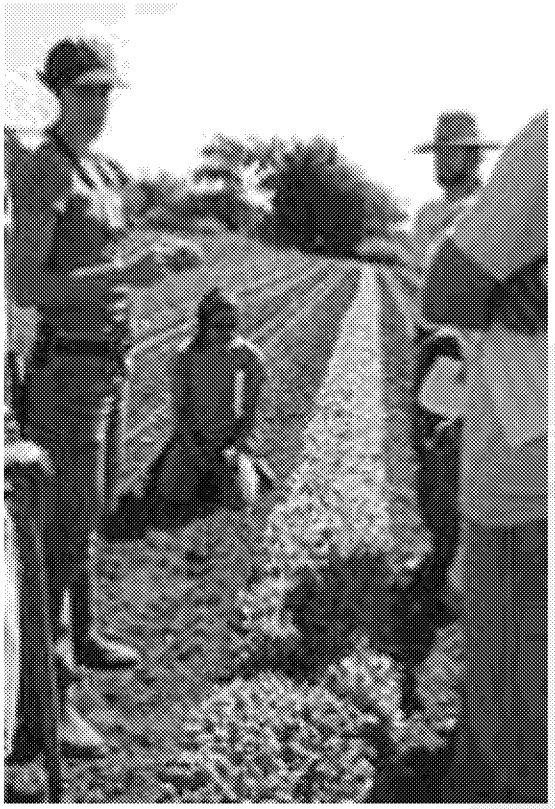
- Support this effort through your local/regional agricultural representatives
- Talk to others
- Provide feedback and information
- Participate with WQCC



Opportunities

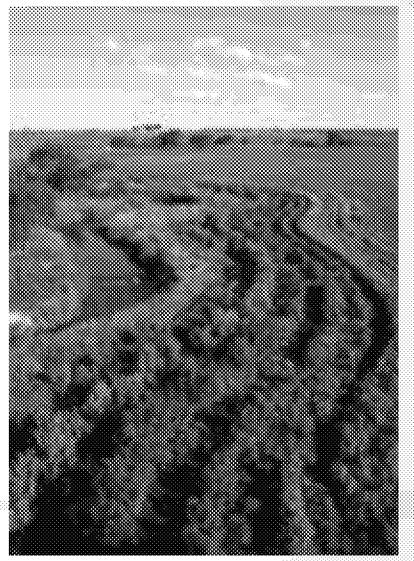
Participate

- Attend monthly Ag TF meetings (phone)
- Share knowledge on BMPs
- Share or collect WQ info
- Work in your districts
- Help get the message out



Opportunities

Why Participate?



Sharing information and resources across sectors

Leveraging strength in numbers

Provide facts and information

Present agriculture as part of the solution

Help drive the bus on nutrient regulations

Help the WQCC make an informed decision

Assumption: Ag runoff is a major source of nutrients

We can influence this assumption

You can help shape regulatory action

This is the *time* and *opportunity* to be involved

Take Action

Bill Hammerich; Colorado Livestock
Randy Traxler; Colorado Wheat
Mark Sponsler; Colorado Corn

Andrew Neuhart; CMF
aneuhart@brwncald.com
(303) 239-5429
http://coloradoframework.org/

COLORADO
MONITORING
FRAMEWORK

The Rocky Mountain National Park Air Quality Initiative: Partnership to Reduce Nitrogen Impacts

October 23, 2017

EPA Animal Agriculture Discussion Group
2017

OVERVIEW

Background of the Initiative

- James Hou
  - USEPA R8, Denver, CO

Monitoring and current research

- Lisa Devore
  - Colorado Department of Public Health and the Environment, Denver, CO

Early Warning System and Ag Collaboration

- Bill Hammerich
  - Colorado Livestock Association, Greeley, CO

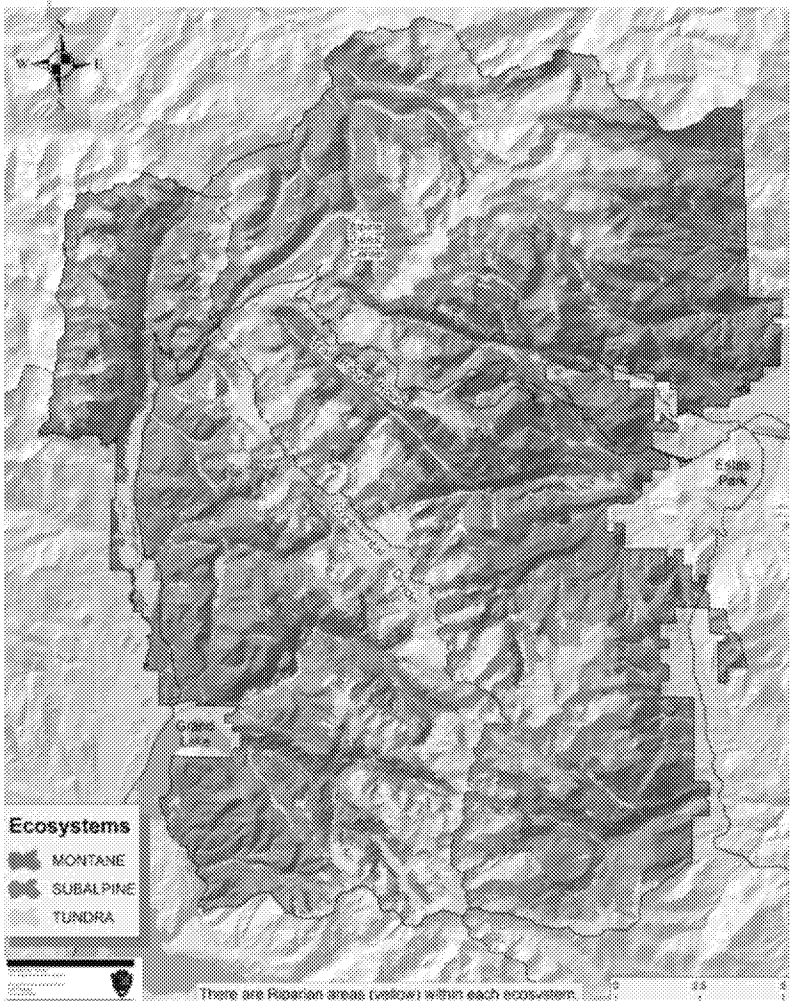
BMPs at Feedlots and Dairies

- Justin Miller
  - JBS Five Rivers Cattle Feeding, Lamar, CO.
- Jon Slutsky
  - La Luna Dairy, Wellington, CO

BACKGROUND OF THE INITIATIVE

James Hou
US EPA Region 8
Denver, CO

RMNP AQ INITIATIVE: BACKGROUND

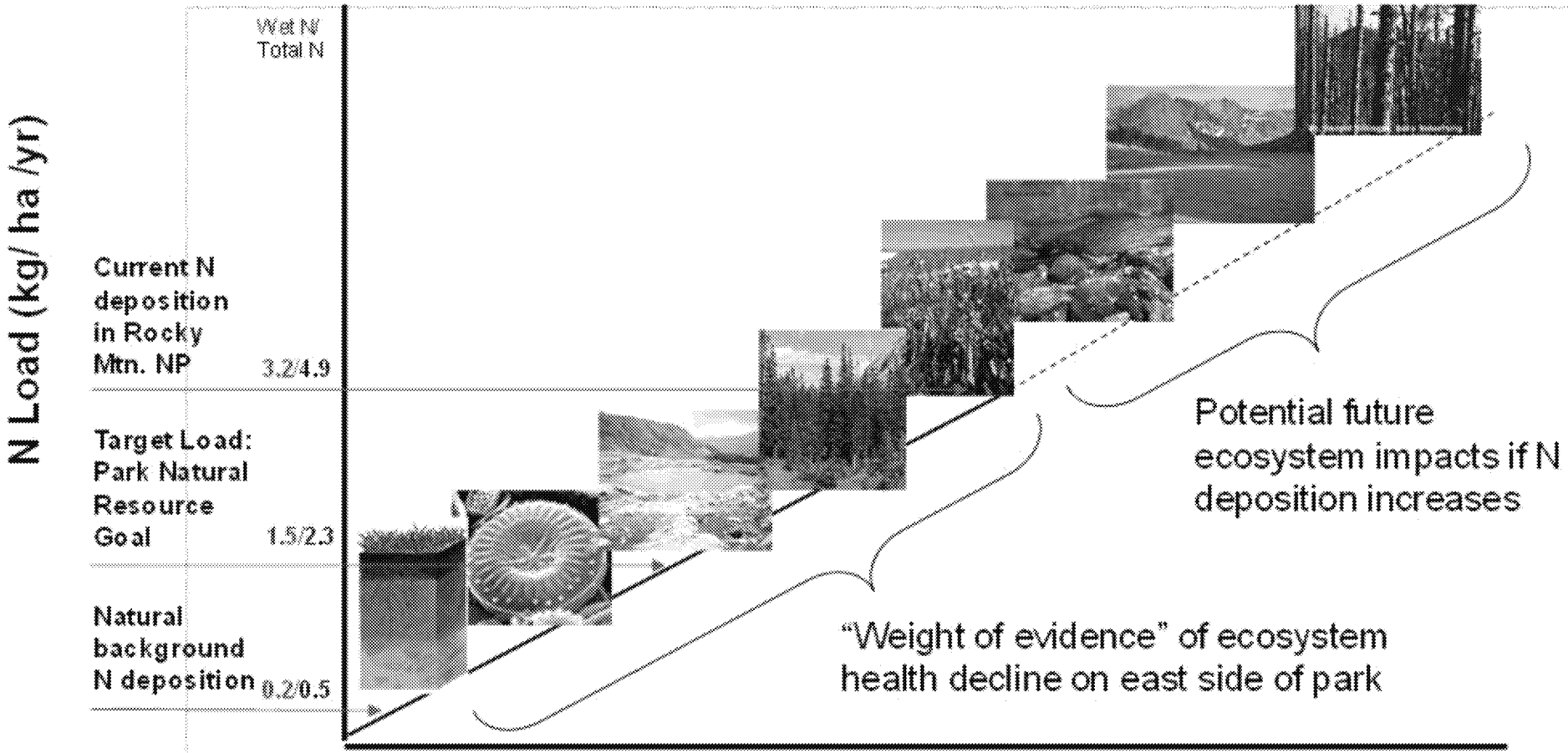


- Petition from Environmental Defense and Colorado Trout Unlimited - Sept 2004
  - ID's adverse impacts from air pollution
- Interagency effort addresses air pollution issues in RMNP
  - Focus on nitrogen deposition
- "Weight of the evidence" approach considers:
  - Monitoring/trends
  - Attribution studies
  - Planned reductions
- Nitrogen Deposition Reduction Plan (2007)
- Contingency Plan (2010)
- 2012 Milestone Report (2014)

CRITICAL LOAD

- Large body of evidence indicates nitrogen deposition has affected and continues to cause harmful effects on sensitive ecosystems within the park.
  - Current wet deposition monitored at ~3.2 kg N/hectare/year (rolling 5-year average – 2011-2015)
  - Natural background estimated at 0.2 kg N/hectare/year
- Specific, published (peer-reviewed) research has shown that wet deposition levels at the time harmful effects started to occur was ~1.5 kg N/ha/yr.

Rocky Mountain National Park: Continuum of Impacts to Ecological Health



Change in alpine plant species
CL = 3.0 kg/ha/yr total N

Increases in "weedy" lichen species
CL = 3.1 kg/ha/yr total N

Effects on aquatic animals (episodic acidification) begins
CL = 4.0 kg/ha/yr total N

Change in aquatic plant species composition
CL = 1.5 kg/ha/yr wet N

Soil N saturation/ leaching
4.0 kg/ha/yr total N

Forest decline (acidification effects on trees)
CL = 8.0 kg/ha/yr total N

NPS-ARD
2017

Solid line text box = observed effects; Dotted line text box = potential effects

NITROGEN DEPOSITION REDUCTION PLAN & CONTINGENCY PLAN

- Original NDRP endorsed by NPS, EPA and CDPHE and the Colorado Air Quality Control Commission on August 16, 2007
  1) Management approach based on collaborative process
  2) Voluntary approach, no mandatory requirements or standards
  3) Sets long-term (25-year) resource management goal
  4) Sets timeline and interim (5-year) milestone goals intervals to achieve nitrogen reduction goal by 2032
  5) Strategies to achieve goal
  6) Identifies options that can be implemented on a voluntary basis

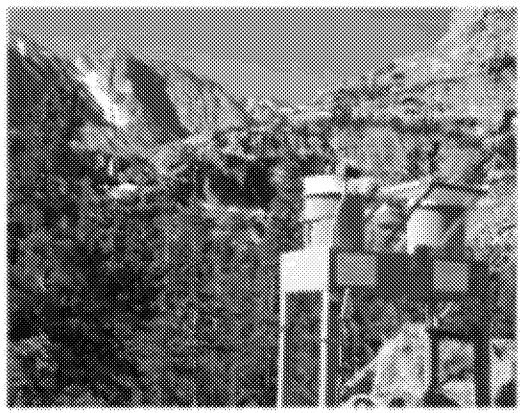
- Contingency Plan endorsed by NPS, EPA and CDPHE and the Colorado Air Quality Control Commission on June 22, 2010
  - ❖ Adaptive management approach consisting of 5 elements
    1) Data Tracking Plan
    2) Triggering Mechanism
    3) Recommending & Implementing Contingency Measures
    4) List of Potential Contingency Measures
    5) Public Outreach & Participation

MONITORING AND CURRENT RESEARCH

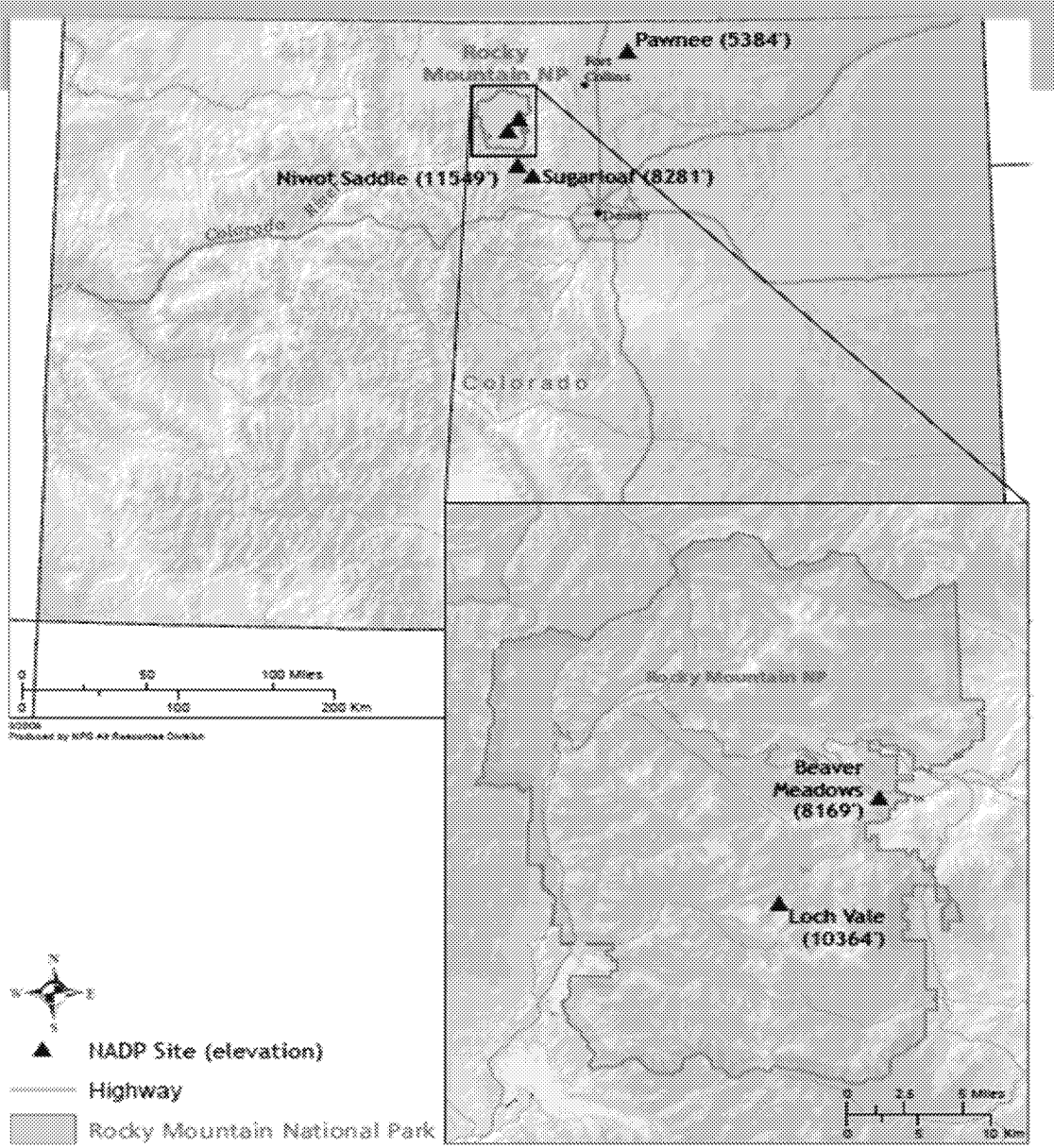
Lisa Devore
Colorado Department of Health and the Environment
Denver, CO

MONITORING & TRACKING

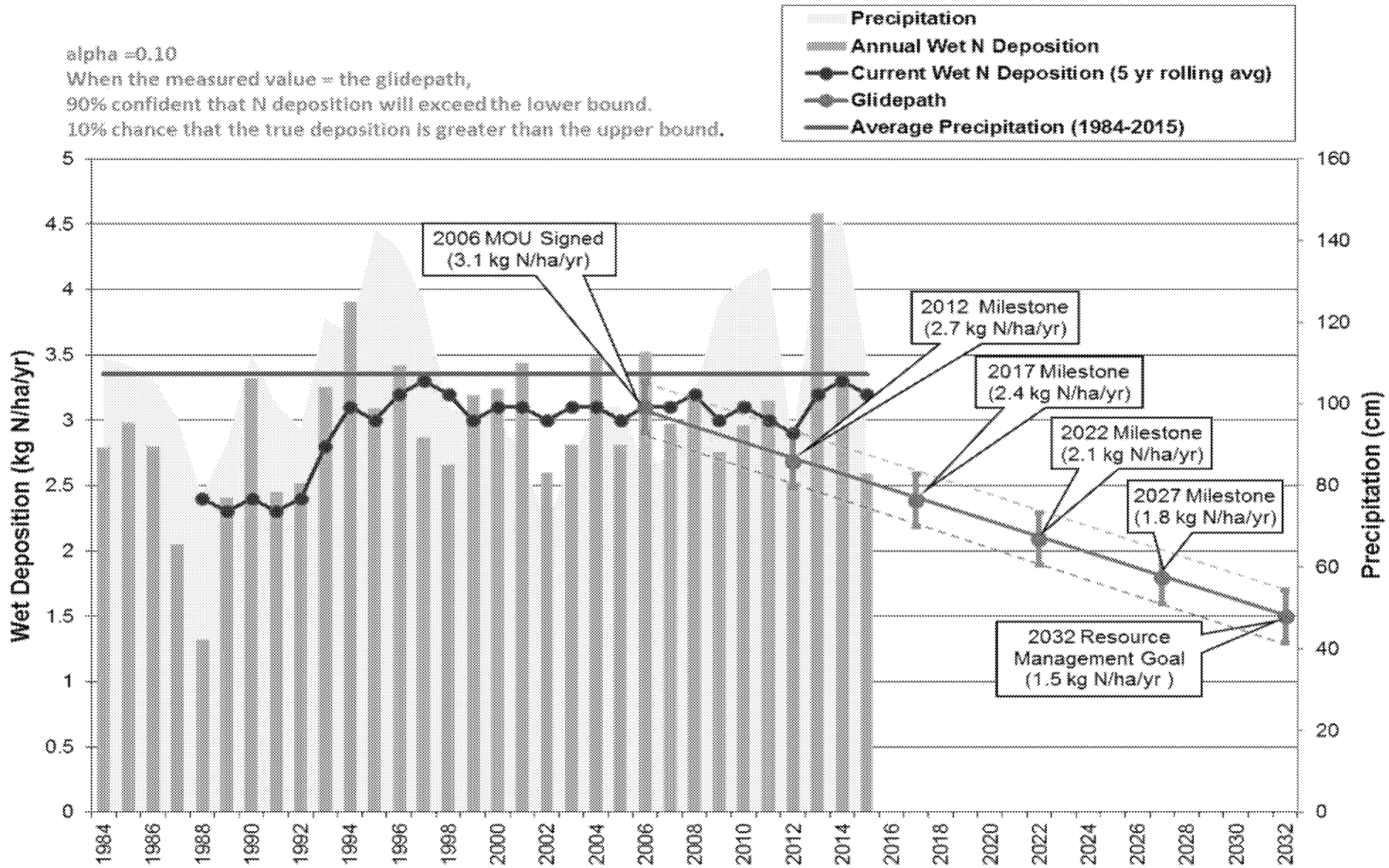
- Wet nitrogen deposition has stabilized in both the long- and short-term
- Long-Term Statistical Trend (1984-2015*):
  - Wet nitrogen deposition increased at RMNP Loch Vale until 2010 and is now stable, although it continues to increase at RMNP Beaver Meadows
  - Ammonium is increasing at all 5 sites
  - Nitrate is decreasing at 2 sites
- Short-Term 5 or 7 year Statistical Trends (2011-2015 or 2009-2015):
  - Wet nitrogen deposition is stable at all sites
  - Ammonium is increasing at 3 sites
  - Nitrate is decreasing at 1 sites
- Loch Vale Co-located site (2009 - 2013)
  - Provided QA/QC support for trends
  - Basis for confidence intervals



MONITORING AND TRACKING

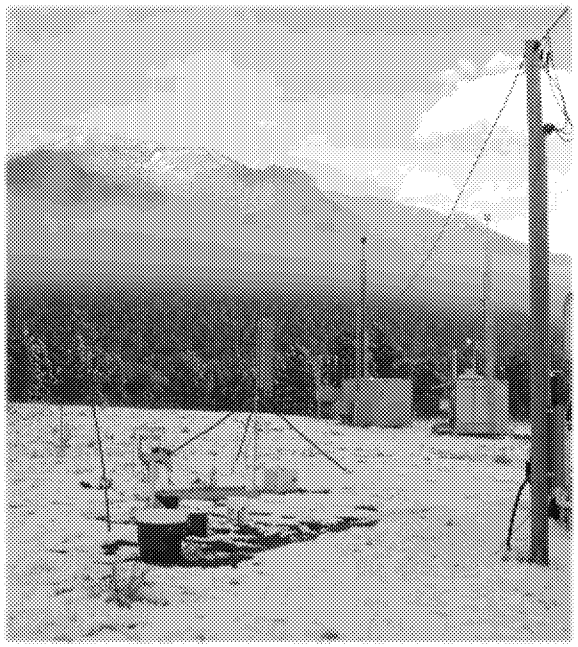


RMNP LOCH VALE NITROGEN DEPOSITION & NDRP GLIDEPATH



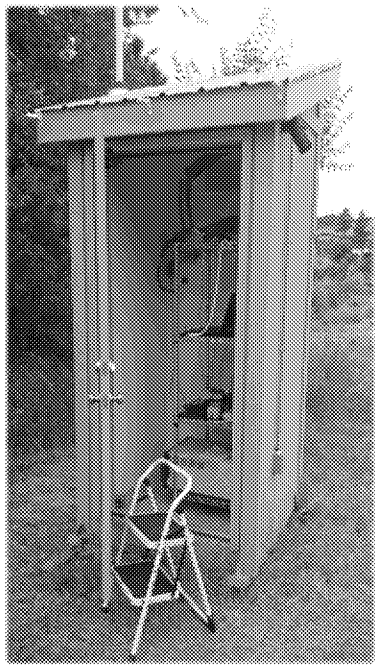
NITROGEN SOURCE AREAS & TRANSPORT PATTERNS

- During spring and fall upslope weather events, high concentrations of both types of nitrogen move from eastern urban & agricultural areas of Front Range to RMNP.
- Regular summer upslope transport from mountain valley convection
- Substantial portion of deposited nitrogen originates in Colorado
  - More than 40% of ammonia from CO, about 70% from Front Range (Denver to state line), Morgan, and Weld counties
  - Less than 50% nitrogen oxides (NO_x) from Colorado
  - Reducing NH_x emissions in closer proximity to park have greater positive effect (not all emissions are equal)
- In-park/nearby sources of ammonia not considered significant contributors to deposition in RMNP

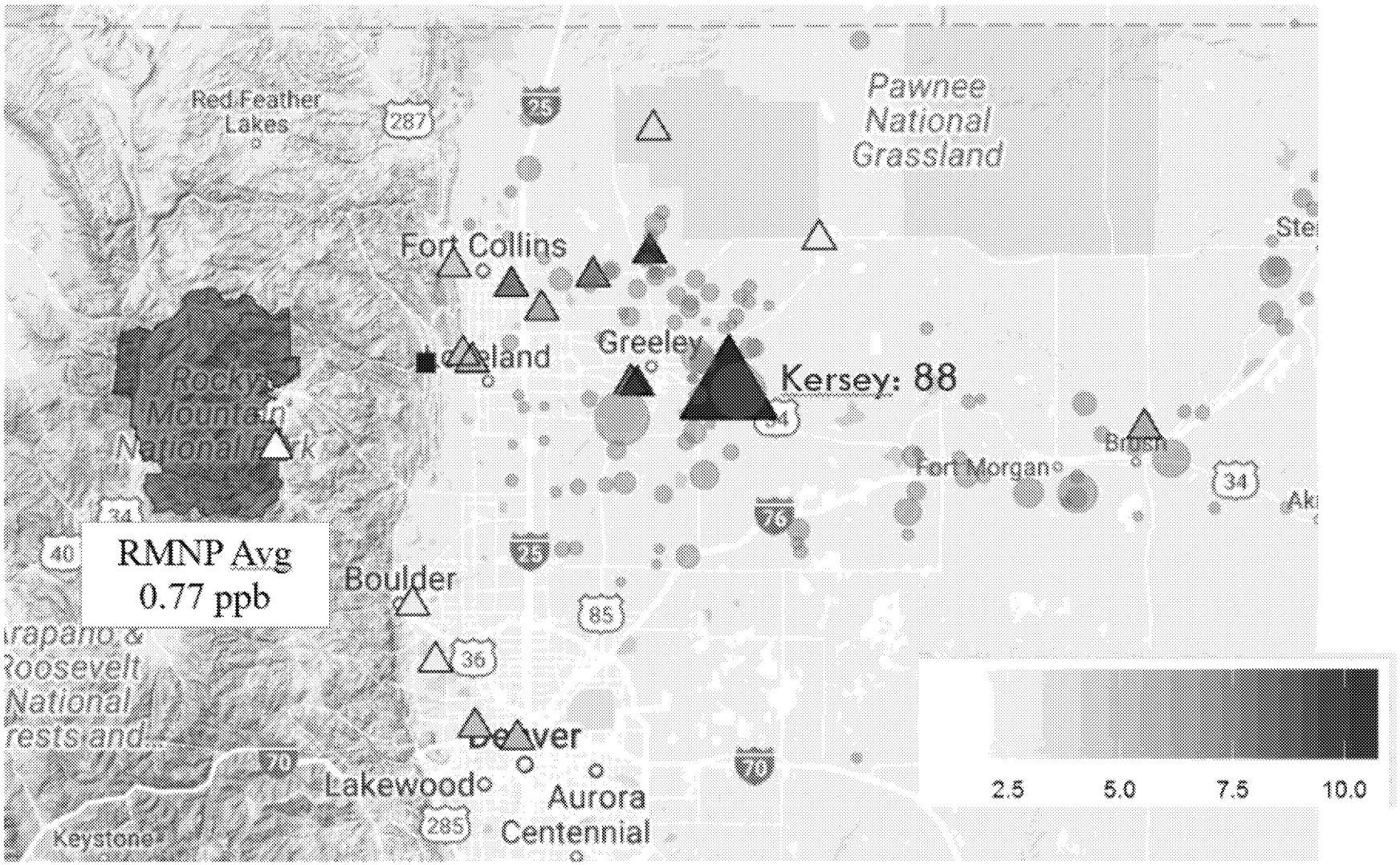


MONITORING & RESEARCH PROJECTS

- Continuous ammonia monitors in Greeley (summer 2014; March-Oct 2015, 2016, planned for 2017) and Loveland (March-Oct 2015 , 2016, beginning again March2017) (NPS/CSU/NRCS/CDPHE)
- Additional monitor in RMNP (July 2014 March-Oct 2015, 2016, beginning again March 2017) (NPS/EPA)
  - Continuous ammonia
  - Daily ammonia, nitric acid, PM2.5 nitrate and ammonium
  - 3x/week wet dep of oxidized, reduced, and organic N
- USDA funded summertime ammonia network (March – October; 2017 will include several Denver area sites)
- Transect of High-Time Resolution Ammonia (NRCS/Weld County/CLA/Dairy Board/CDPHE)



2016 SUMMER AVERAGE MAP



ROCKY MOUNTAIN NATIONAL PARK

COLORADO AG ENGAGEMENT

Bill Hammerich

Colorado Livestock Association

BACKGROUND

- Dec 2005 – Became aware of initiative and MOU agencies
- Dec 2006 – RMNP Ag Subcommittee was formed
  - Goals:
    - Bring agriculture's voice to the table
    - Be proactive in addressing the issue
    - Review the science and data, and agricultural trends
    - Science before policy

RMNP AGRICULTURE SUBCOMMITTEE

Colorado Livestock Association	Colorado Dairy Farmers	Colorado Cattlemen's Association	Colorado Corn Grower's Association	Colorado Association of Wheat Growers
Colorado Farm Bureau	Colorado Pork Producers Council	Colorado Association of Conservation Districts	Rocky Mountain Farmers Union	Rocky Mountain Agri-Business Association
La Luna Dairy	JBS Five Rivers Cattle Feeding	Environmental Defense Fund	Agricultural Consultants	Colorado State University
USDA Natural Resource Conservation Service	United States Environmental Protection Agency	National Park Service	Colorado Department of Public Health & Environment	Colorado Department of Agriculture

SUBCOMMITTEE ACHIEVEMENTS

- Developed the ag-related chapters of the Nitrogen Deposition Reduction Plan and the Contingency Plan
- Organized outreach efforts (Symposiums, Fact Sheet, and Presentations)
- Voiced need for a voluntary approach to allow time for ammonia BMPs to move from research to ground-level and implementation
- Championed agriculture's efforts to reduce ammonia emissions from livestock and crop production activities

EARLY WARNING SYSTEM

- Started development in 2013
- Weather-based "warning system"
  - Email or text message
- Notify crop and livestock producers of potential upslope events
- Request producers to temporarily avoid practices associated with nitrogen emissions
- Completed 3-Year Pilot Project (2013-2015)
- Results to be published by end of year 2017
- Continuation through 2020

LESSONS LEARNED

- Early Warning System
  - Ammonia emissions from agricultural areas are seasonally important.
    - Identifies the need for seasonal management practices.
  - Increase producer participation
- Areas of Research Still Needed
  - Improved ammonia emissions inventories
  - Large scale nitrogen balance studies to quantify ammonia emitted during specific manure (feces and urine) management practices
  - Continue to identify proven & cost effective BMP's tailored to individual operations.
- Broader stakeholder involvement
  - Non-ag ammonia sources
  - Municipalities
  - Other states
- Documentation of successes and failures

CONCLUDING REMARKS

- Nitrogen deposition at RMNP is a long-term problem which requires a long-term solution.
- Actions being taken today are shaping the dialogue, course and process.
- Ag industry needs certainty built into voluntary efforts.

FEEDLOT OVERVIEW

Justin Miller
JBS Five Rivers Cattle Feeding, Lamar, CO

FEEDLOT PRODUCTION

- Typically feeder cattle arrive to the feedlot weighing 500-900 lbs
  - 650-800 lbs make up the highest percentage of feeder cattle
- Cattle will be accessed for health upon receipt
- They will be fed hay and allowed to rest over night
- The next day they will be processed at which time they will be:
  - Individually weighed and sorted into like sized weight groups
  - Given an ear tag for identification
  - Vaccinated to prevent disease
  - Given an implant to improve feed efficiency and gain (if they are natural no implant will be given)
- They will then be moved to a home pen where they will remain until harvest at approximately 1,350-1,400 lbs

PEN MANAGEMENT

- When a pen of cattle is shipped for harvest the pen they leave will be cleaned for the next group of cattle.
  - Pen Cleaning
    - Pens will be scraped, ripped and scraped again to remove all but a small layer of manure from the pen surface.
    - Concrete pads in front of the feed bunks and water tanks will scraped
    - The manure will be moved to the back of the pen and tightly packed into a mound until it can be hauled out for land application to farm fields or to be composted
    - If manure is being hauled at the time of cleaning the manure may be stacked so that it can be directly loaded onto trucks
  - Once a pen has been cleaned and new cattle moved to the pen, it is our goal to not disturb those cattle with equipment again
    - Of course this is dictated by the weather if pens get wet and cattle comfort is compromised
  - In a large feedlot cattle are shipped to harvest 5 days per week and new cattle are received 7 day per week, so pen cleaning typically takes place everyday

FEED MANAGEMENT

- Every pen of cattle will be fed 3 three hot meals per day
  - The ration the cattle receive is formulated by a PhD nutritionist and will be balanced to meet all the cattle nutritional requirements
    - Energy
    - Protein
    - Vitamins
    - Minerals
  - If a feedlot does not have a staff nutritionist this service is typically provided by the company that provides their feed supplements
  - Cattle that are not in a natural program will receive a Beta Agonist in their feed during the last 28 days prior to harvest
    - Beta Agonist are a non-hormonal feed additives that increases the rate of weight gain without additional feed intake. It helps cattle make the most of the feed they eat resulting in more lean muscle growth instead of fat.

CATTLE CARE

- Every animal in each pen of cattle is assessed individually for sickness each day
  - If any animal is suspected to be sick it is removed from the pen and taken to a hospital facility and more closely assessed by a vet tech for sickness through visual observation and diagnosis such as temperature.
  - If the animal is confirmed to be sick it is administered an antibiotic under the supervision of a licensed veterinarian
    - If that animal is in a natural program it will be removed from the program following administration of an antibiotic
- Cattle care and pen management can be thought of similar to and extended stay hotel
  - We do the best job we can to give cattle a comfortable pen when they arrive and then we try to leave them alone but are always on call if they have a need
- Cattle comfort and low stress are our goals
  - This leads to maximized efficiency

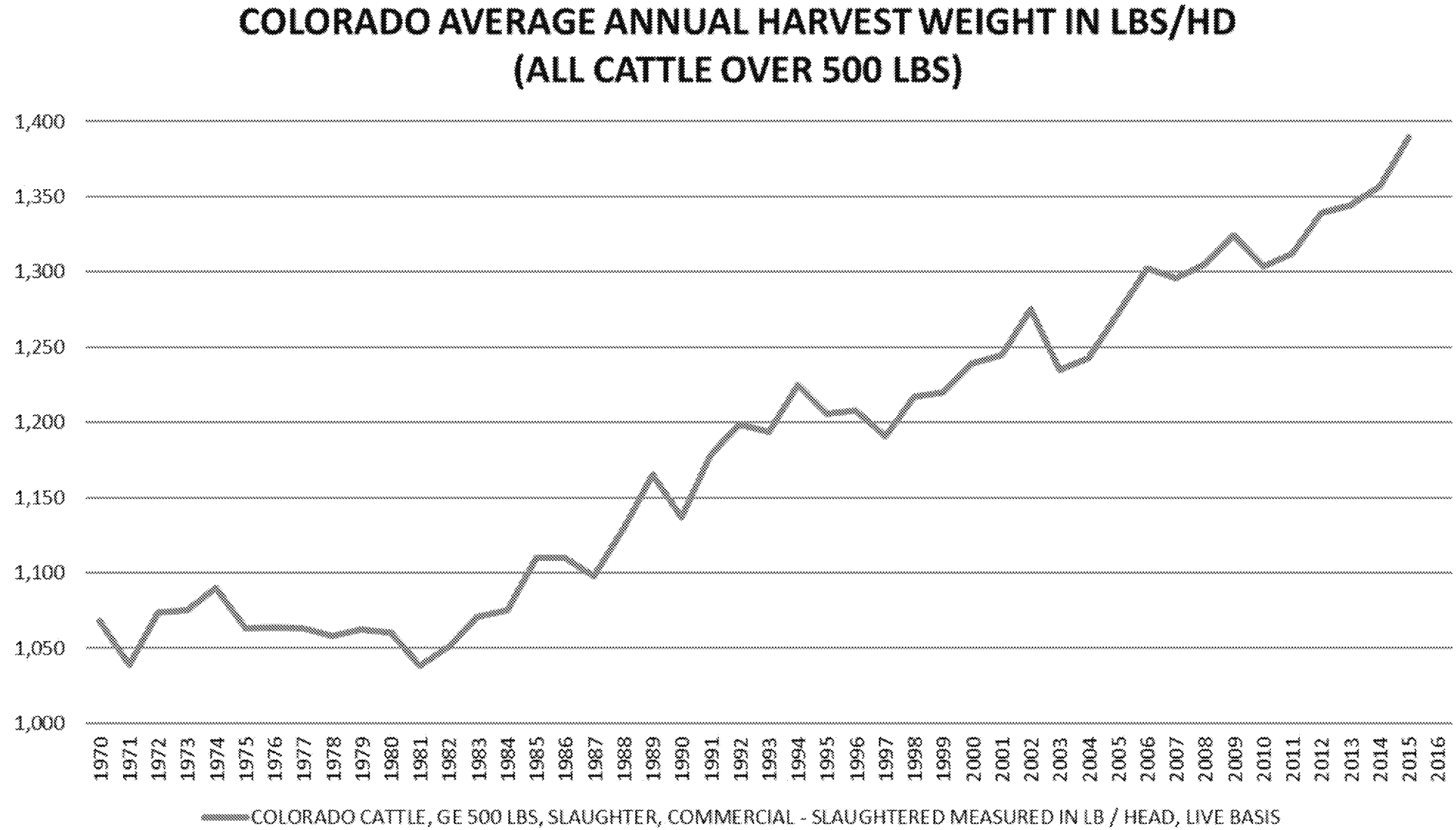
INTERPRETING BEEF CATTLE NUMBERS

TOTAL COLORADO BEEF CATTLE INVENTORY, INCL CALVES

INTERPRETING BEEF CATTLE NUMBERS

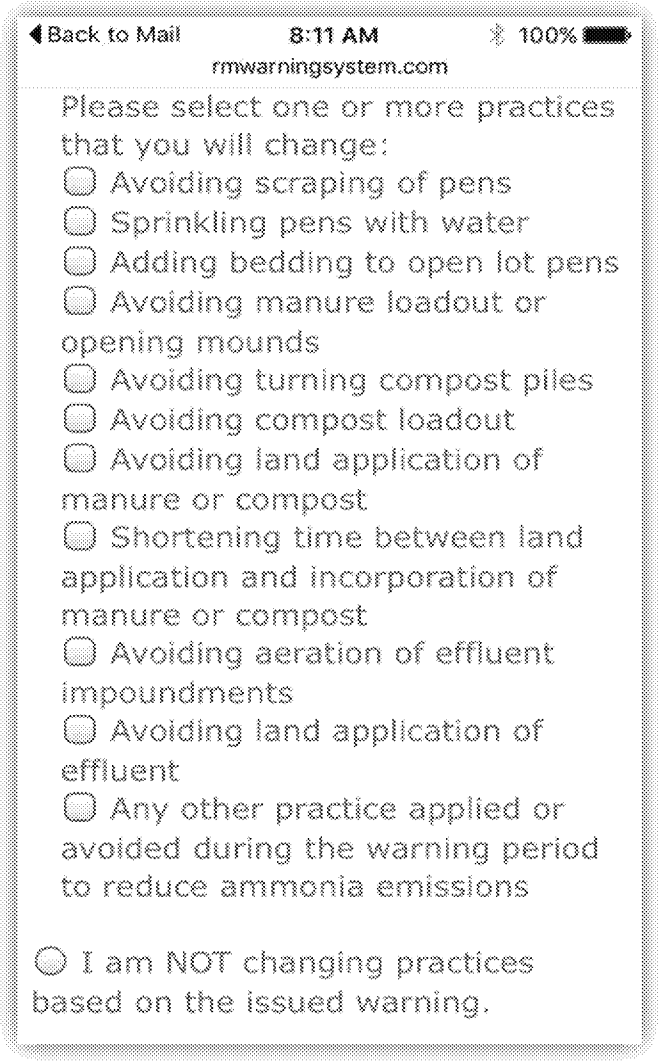
TOTAL ANNUAL COLORADO BEEF PRODUCTION IN LBS (ALL CATTLE OVER 500 LBS)

INTERPRETING BEEF CATTLE NUMBERS



FEEDLOT AMMONIA REDUCTION BMPS

- What are the BMPs?


Back to Mail 8:11 AM 100%
rmwarningsystem.com

Please select one or more practices that you will change:

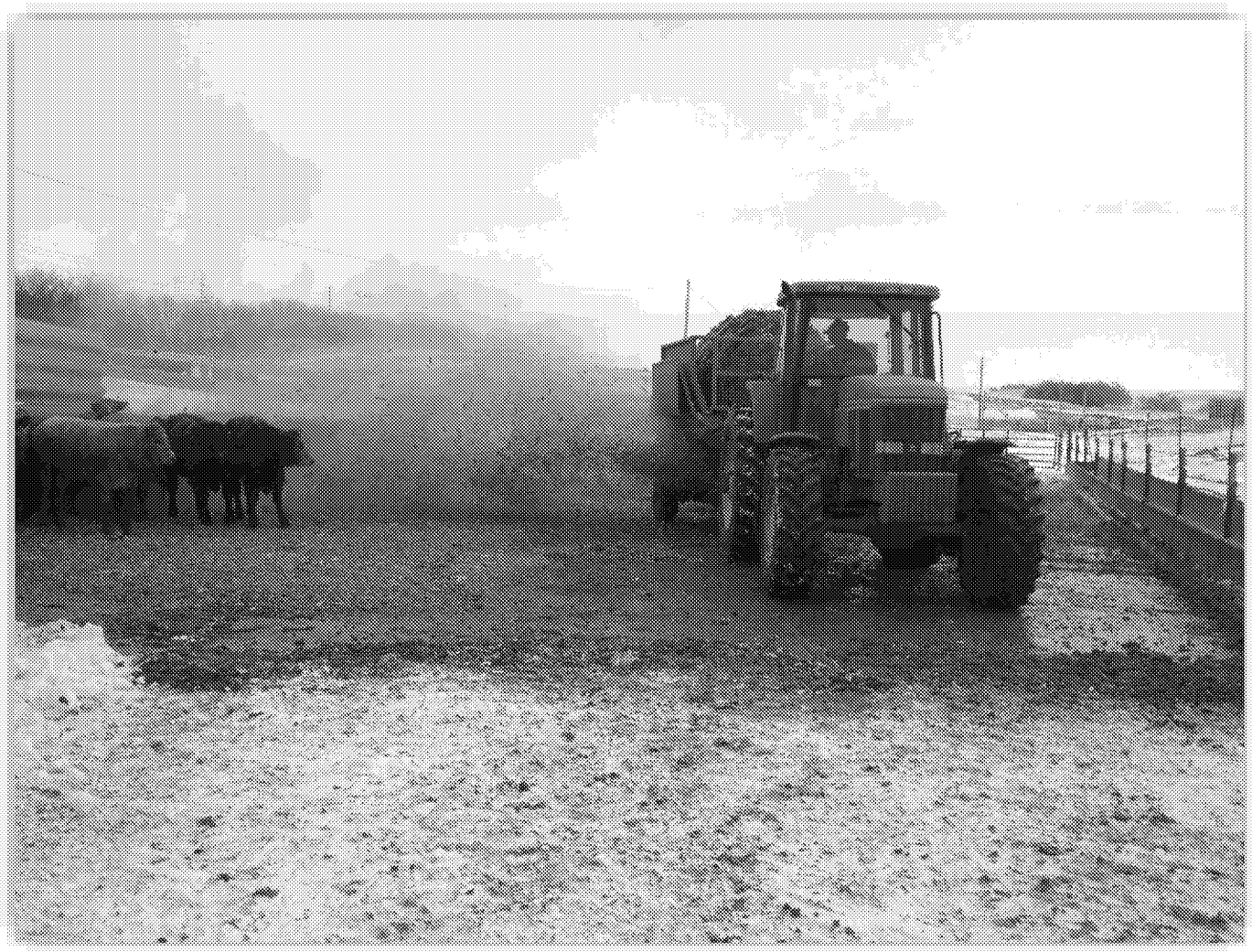
- ☐ Avoiding scraping of pens
- ☐ Sprinkling pens with water
- ☐ Adding bedding to open lot pens
- ☐ Avoiding manure loadout or opening mounds
- ☐ Avoiding turning compost piles
- ☐ Avoiding compost loadout
- ☐ Avoiding land application of manure or compost
- ☐ Shortening time between land application and incorporation of manure or compost
- ☐ Avoiding aeration of effluent impoundments
- ☐ Avoiding land application of effluent
- ☐ Any other practice applied or avoided during the warning period to reduce ammonia emissions

○ I am NOT changing practices based on the issued warning.

AVOIDING SCRAPING PENS

SPRINKLING PENS WITH WATER

ADDING BEDDING TO OPEN LOTS



AVOID MANURE LOADOUT OR OPENING MOUNDS

Avoid Turning Compost Piles

AVOID COMPOST LOADOUT OR SCREENING

AVOID LAND APPLICATION OF MANURE OR COMPOST

SHORTEN TIME BETWEEN LAND APPLICATION AND INCORPORATION OF MANURE OR COMPOST

AVOID AERATION OF EFFLUENT IMPOUNDMENTS

AVOID LAND APPLICATION OF EFFLUENT

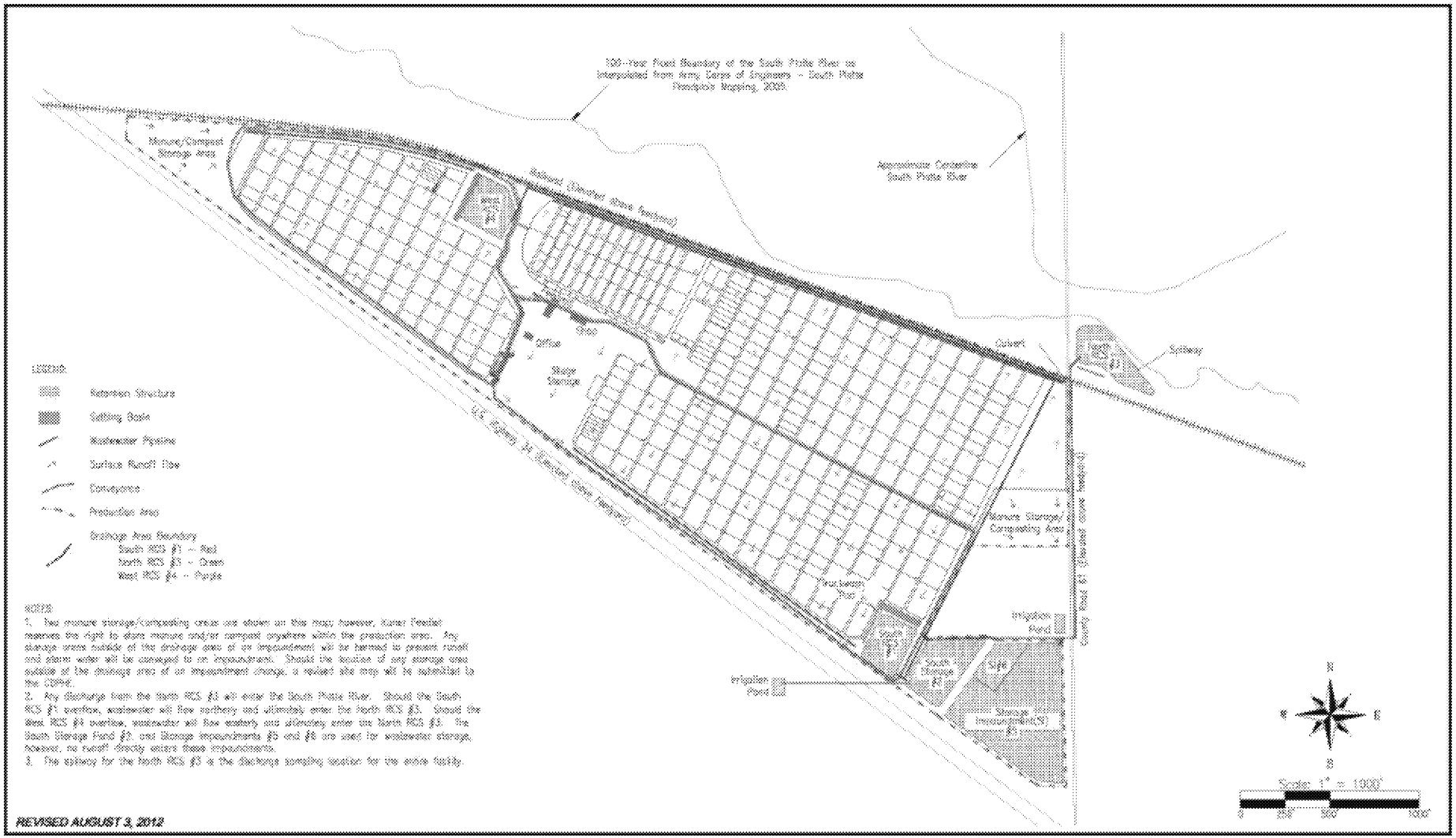
OTHER PRACTICES

- Nutrient Management
  - All concentrated animal feeding operations (CAFOs) must have a nutrient management plan (NMP)
    - A nutrient management plan is designed to avoid over application of nutrients to farm ground
    - It accounts for nutrients that are present in the soil through annual soil sampling
    - It also accounts for all nutrients that will be applied, both organic and inorganic forms
    - It is based on a planned crop rotation and realistic yield goals based on site specific historical data or local averages when site specific historical data is not available
    - Nutrient applications are based on crop requirements from university research or by actual historical crop removal data
    - NMP results are reported to the state at the end of each crop year in a CAFO's annual report
  - A NMP is designed and written by a certified crop advisor (CCA)
  - A CCA is tested and certified by the American Society of Agronomy
    - Once certified the CCA must continue to earn 40 hours of continue education every 2 years to maintain their certification

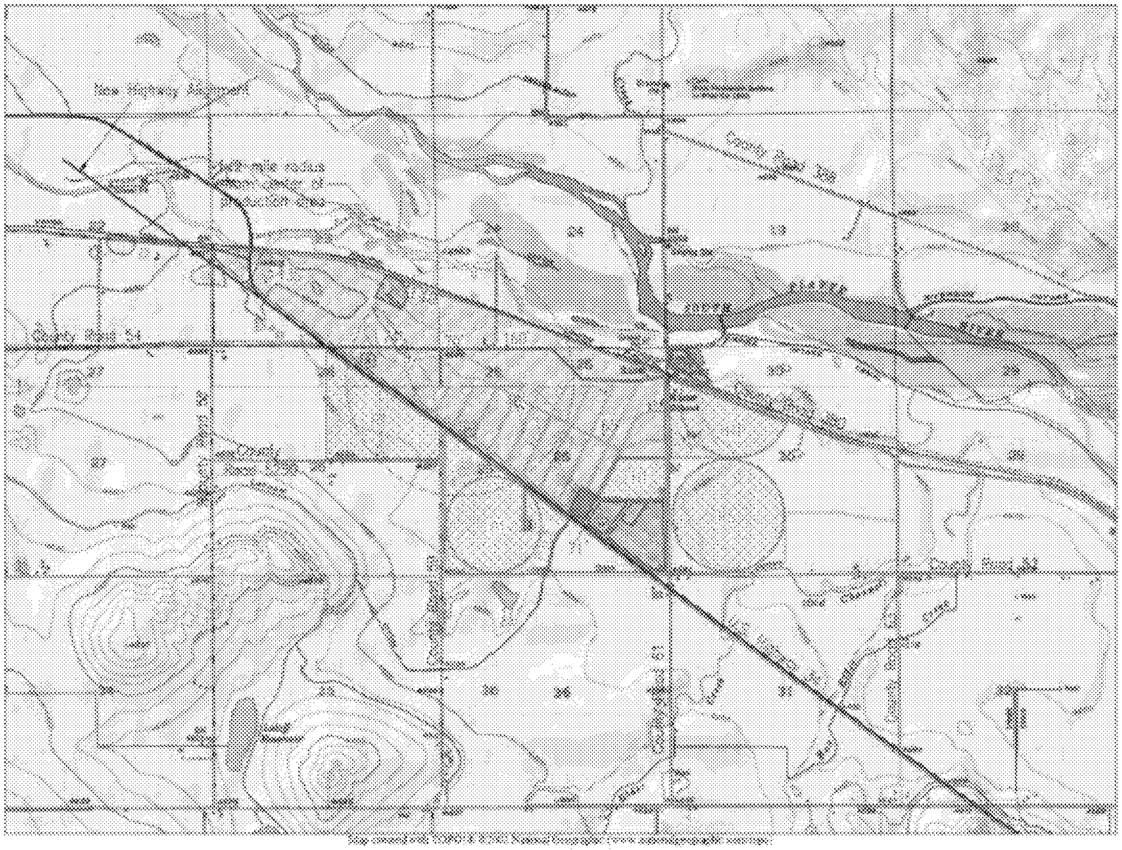
OTHER PRACTICES

- Nutrition
  - Rations balanced by a PHD Nutritionist to maximize animal efficiency and nutrient utilization
- Cattle Genetics
  - Selecting for more efficient growth
- Emerging Technologies
  - Beta Agonist and Implants to maximize efficiency
- Managing animal health and maximizing animal comfort and growth efficiency
- Maximizing efficiency is vital to helping reduce emissions per pound of beef
  - Lbs beef/lbs feed…just like miles/gallon
- Research is continuing
  - Agriculture margins can be very volatile and maximizing efficiency in both animal and crop production is very important to agriculture producers
  - Nitrogen is a valuable resource in both animal and crop production and as such ag producers are economically incentivized to maximize its efficient use and minimize its losses to the environment

BMPS TAILORED FOR INDIVIDUAL OPERATIONS



BMPS TAILORED FOR INDIVIDUAL OPERATIONS



NOTES:
1. The receiving waters for discharges from the impoundments is the South Platte River. The South Platte River is located north of the feedyard production area and is shown on this map.
2. Should manure and/or compost be stored outside of the drainage area of a retention structure, the area will be bermed to prevent runoff and storm water will be conveyed to an impoundment.
3. Manure and/or compost storage areas outside of the drainage area of an impoundment that do not contain manure and/or compost may not be bermed.

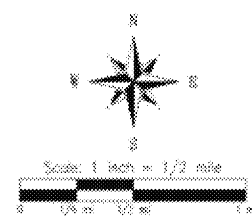
LEGEND:

Production Area

Land Application Area

Retention Structure

Depth, Water Well with Water Level Depth



REVISED AUGUST 3, 2012

DAIRY OVERVIEW

Jon Slutsky
La Luna Dairy
Wellington, CO

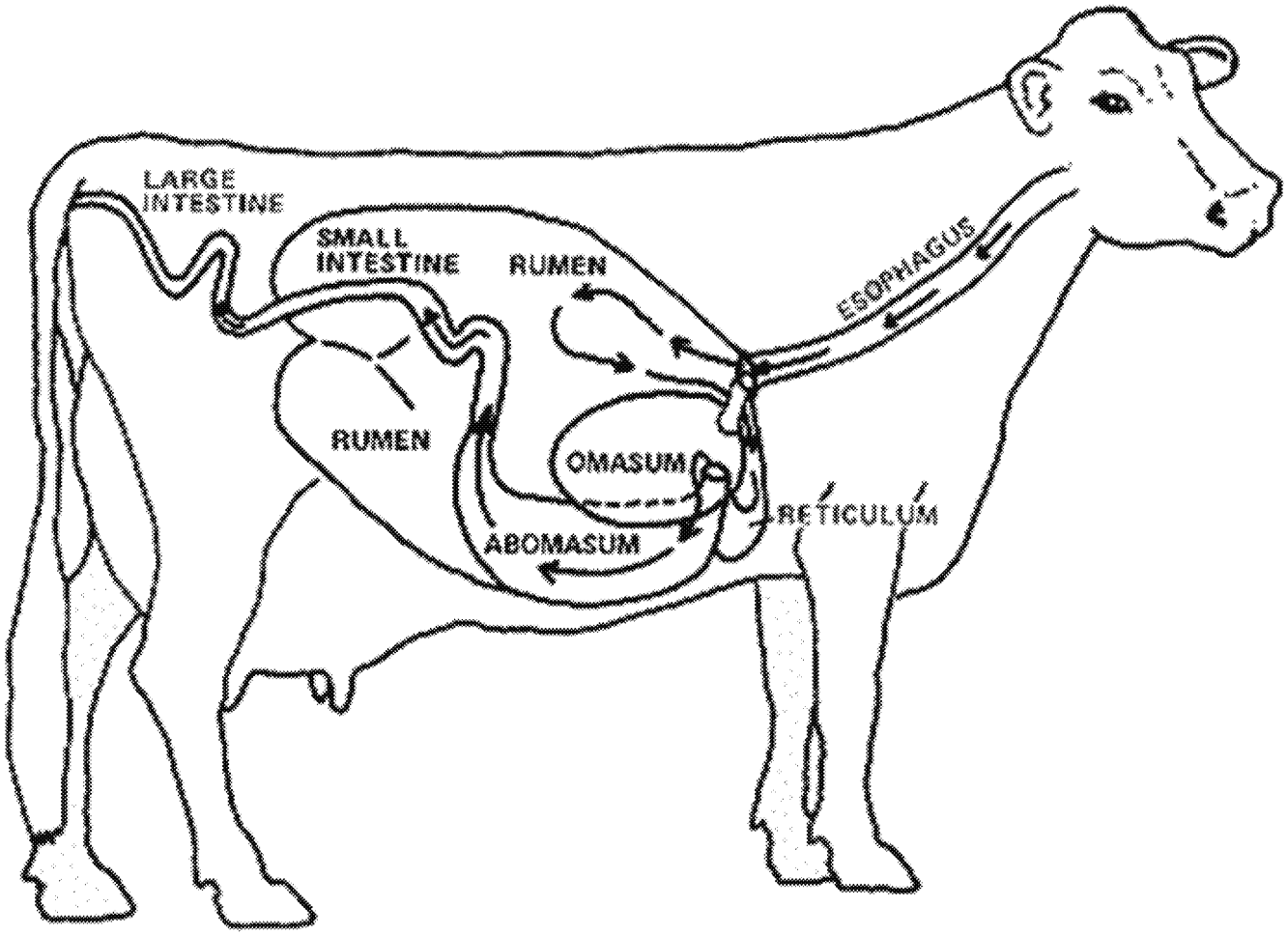
GENERAL

- Stop compost activities
  - Turning
  - Watering compost
  - Loading/moving/screening
- Reduce or stop manure activities as much as possible during upslope events
- Cannot stop caring for animals.
  - Must keep cows clean and dry
  - Must provide bedding/housing, feed, water
- Reduce Flushing, manure handling
- Turn off evaporators or aerators
- Scrape some freestall alleys instead of flushing
- Composting procedures to reduce NH3 emissions
  - Less turning
  - More carbon added to manure

ADVANCES IN DAIRY

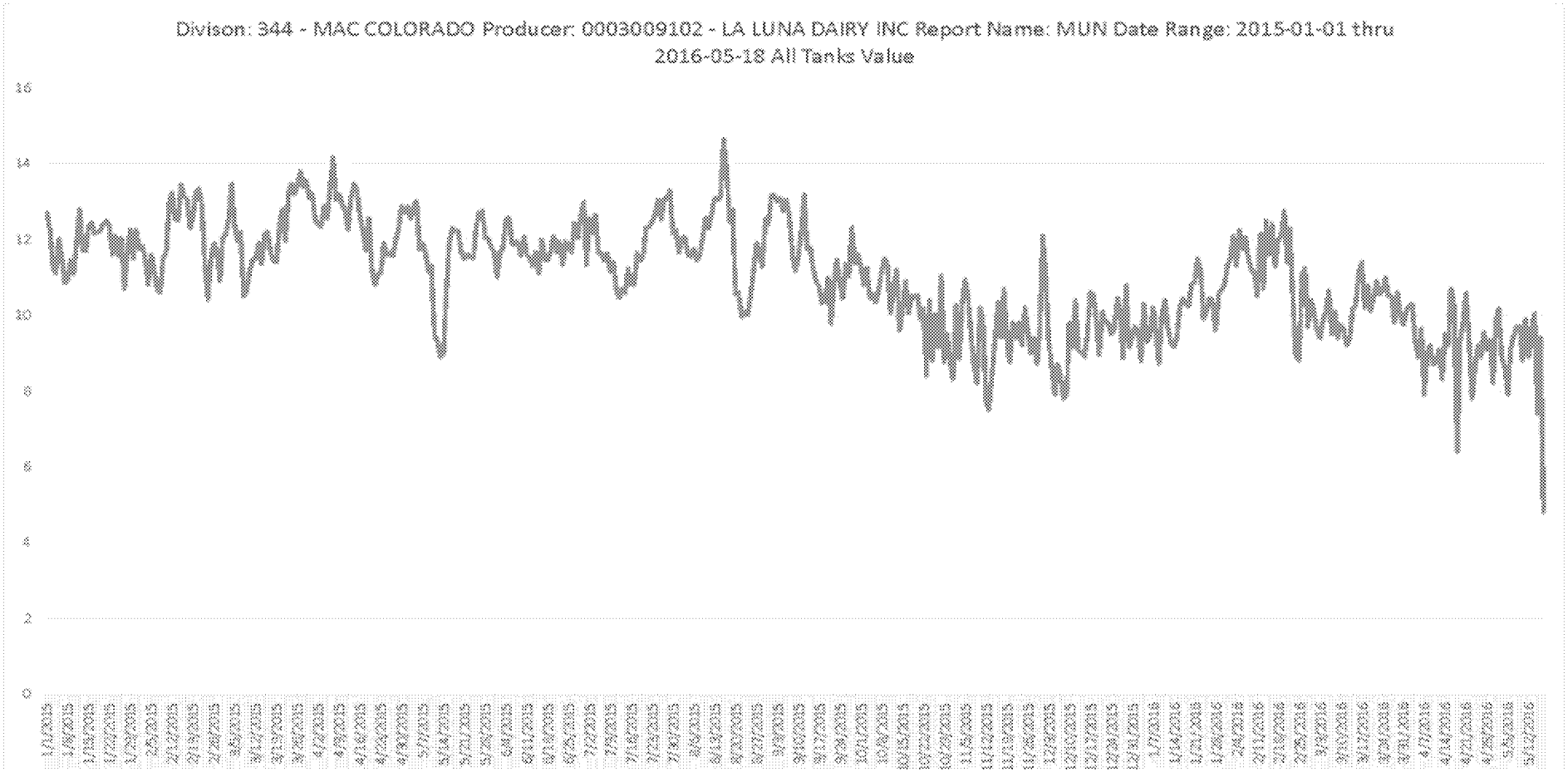
- More milk/cow. Colorado ranks #1 in pounds of milk/cow (25,600 lbs.)
- Virtually all dairies test their feed and use a nutritionist to formulate precisely balanced rations for the various groups of cows on the farm.
  - Protein, energy and fiber are fed to maximize production, milk fat, milk protein, body condition, reproductive efficiency, and health and efficiency.
  - Feeding has gone from an art to a science.
    - Knowledge of the types of protein in various feeds and how to use them to maximize efficiency, combined with better understanding of the digestive process in cattle has reduced urea excreted and increased productivity.
      - Rumen digestible protein (Degradable protein)=NH3
      - Bypass protein (Undegradable protein)=no NH3

ENTERIC AMMONIA



MONITORING AMMONIA EXCRETION

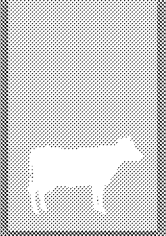
- Monitoring MUNs helps inform the success of the feeding program.
  - State average: August-October = 10.30 mg\dl



NEW TECHNOLOGY

- Genetic improvement has increased dramatically through the use of extensively proven bulls and more recently because of the mapping of the entire bovine genome.
  - Farmers can select for production, health, longevity, and conformation traits
    - Use of genetic typing of both bulls and cows on the farm to make use of these traits
    - Embryo flushing and transfer on dairies has become more common-accelerates improvements
- Emerging technologies
  - Feed additives to increase feed efficiency-Yeast products, Zeolite, monensin
  - Real time rumen monitors
  - Advances in plant genetics and breeding have resulted in more digestible varieties of alfalfa and corn.
  - National Air Quality Site Assessment Tool (NAQSAT), computer modeling

DAIRY AMMONIA REDUCTION BMPS



- BMPs to impact release of NH3 during Early Warning System events
  - Reduced manure/compost handling
  - Cessation of effluent use: lagoon aeration, field application
  - Rapid incorporation of nutrients
- BMPs to impact production of urea.
  - Dairies can monitor protein in diet and MUN in milk.
  - Use of nutritionist
  - Monitoring of feed intake vs production and cattle health
  - Testing of feed
  - Monitoring and recording feed related illnesses; rumen health, testing just fresh animals for ketosis, watching for signs of ruminal acidosis and metabolic disease.

BARRIERS TO IMPLEMENTATION

- Labor
  - Often less labor needed when BMP involves NOT doing something.
  - May make it hard or impossible to catch up the next day if not enough labor then or other scheduled activities would overwhelm the farm.
- Economics, science, education and outreach
  - Understanding of the issue and process of how NH3 is formed.
  - May make picking and implementing BMPs easier.
- Weather/Environment
  - Severe weather may confound implementation
  - Early Warning may not be early enough or actually force producers to pack as much into a day as possible.

BARRIERS TO IMPLEMENTATION CONTINUED

- Hard to compromise animal well-being for environmental well-being
- No appetite for additional "regulation," voluntary or otherwise
  - Most want to do the right thing
  - Often not possible to add expense or infrastructure to accommodate new technology needed to implement a new BMP

THANK YOU

Message

From: Bennett, Tate [Bennett.Tate@epa.gov]
Sent: 11/20/2017 3:25:06 AM
To: Beck, Nancy [Beck.Nancy@epa.gov]
CC: Sands, Jeffrey [sands.jeffrey@epa.gov]
Subject: Fwd: WPS background
Attachments: EPA_WPS.Implementation.Extension.Request_11.16.16.pdf; ATT00001.htm; EPA_WPS.Implementation.Extension.Request_AL_11.22.16.pdf; ATT00002.htm; EPA_WPS.Implementation.Extension.Request_CO_11.28.16.pdf; ATT00003.htm; EPA_WPS.Implementation.Extension.Request_KS_11.28.16.pdf; ATT00004.htm; EPA_WPS.Implementation.Extension.Request_LA_11.20.16.pdf; ATT00005.htm; EPA_WPS.Implementation.Extension.Request_MO_12.01.16.pdf; ATT00006.htm; EPA_WPS.Implementation.Extension.Request_NC_11.29.16.pdf; ATT00007.htm; EPA_WPS.Implementation.Extension.Request_NE_11.28.16.pdf; ATT00008.htm; EPA_WPS.Implementation.Extension.Request_TX_10.07.16.pdf; ATT00009.htm; EPA_WPS.Implementation.Extension.Request_VA_11.28.16.pdf; ATT00010.htm; Letter to Jack Housenger WPS_AEZ.pdf; ATT00011.htm; EPA_Evaluation.Existing.Regulations_05.15.17.pdf; ATT00012.htm; AAPCO Regulatory Reform Comments.pdf; ATT00013.htm; aez-qa-factsheet.pdf; ATT00014.htm

The petition isn't in here but the attached docs might also be helpful.

Begin forwarded message:

From: Dudley Hoskins <Dudley@nasda.org>
Date: July 10, 2017 at 11:47:37 AM EDT
To: "Bennett, Tate" <Bennett.Tate@epa.gov>, "Beck, Nancy" <Beck.Nancy@epa.gov>
Cc: Paul Schlegel <pauls@fb.org>
Subject: RE: WPS background

Just wanted to send a quick note to thank you again for your time and to echo Paul's sentiments.

Per my notes from our meeting, please see the following attachments:

1. <!--[if !supportLists]--><!--[endif]-->NASDA and 9 state-specific requests for extension (Oct – Dec 2016);
2. <!--[if !supportLists]--><!--[endif]-->AAPCO AEZ letter to OPP (Aug 2016);
3. <!--[if !supportLists]--><!--[endif]-->NASDA comments: EPA Reg Reform Docket (05-15-17);
4. <!--[if !supportLists]--><!--[endif]-->AAPCO comments: EPA Reg Reform Docket (05-15-17); and
5. <!--[if !supportLists]--><!--[endif]-->EPA AEZ "Fact Sheet" (April 2016).

Please let me know if you all have any questions or would like any additional information at this time.

Many thanks,

Dudley W. Hoskins ● Public Policy Counsel ● **National Association of State Departments of Agriculture**
4350 North Fairfax Drive Suite 910 Arlington, VA 22203 ● (P) Ex. 6 ● (C) Ex. 6 ● **www.nasda.org**

From: Paul Schlegel [mailto:pauls@fb.org]
Sent: Wednesday, July 05, 2017 3:40 PM
To: Bennett, Tate; Beck, Nancy
Cc: Dudley Hoskins
Subject: RE: WPS background

Tate & Nancy –

Thanks very much for your time. Please let us know how we can be helpful as you move forward. We really appreciate all you are doing.
Paul

Paul Schlegel
Director, Energy and Environment Team
Direct: Ex. 6
Cell: Ex. 6
Email: pauls@fb.org

From: Bennett, Tate [mailto:Bennett.Tate@epa.gov]
Sent: Wednesday, July 05, 2017 2:37 PM
To: Beck, Nancy
Cc: Paul Schlegel
Subject: Fwd: WPS background

Begin forwarded message:

From: "Paul Schlegel" <pauls@fb.org>
To: "Bennett, Tate" <Bennett.Tate@epa.gov>
Subject: WPS background

Tate –
Wanted to share some background material with you in case you might not have seen this stuff. When you have a chance, I'd like to talk about it.
Thanks
Paul

Paul Schlegel
Director, Energy and Environment Team
Direct: Ex. 6
Cell: Ex. 6
Email: pauls@fb.org

DOCKET NUMBER: EPA-HQ-OA-2017-0190 Evaluation of Existing Regulations

COMMENTS SUBMITTED BY: Association of American Pesticide Control Officials (AAPCO)

SUBJECT: Formal comments on EPA Regulatory Reform

SUBMITTED BY: Bonnie M. Rabe, President, AAPCO

DATE: May 15, 2017

The Association of American Pesticide Control Officials (AAPCO) is a national professional association representing pesticide regulatory officials from the 50 states and territories with responsibility for the effective implementation and enforcement of FIFRA and as such are co-regulators with EPA. One of our key objectives is to engage with the agency to ensure workable, effective and efficient regulation of pesticides at both the state and federal level. In terms of regulatory reform, we believe there is room for improvement to the processes and regulations and are providing comments in support of that belief.

RECENT FEDERAL RULE REVISIONS

While supporting the goal of the recent revisions to the Worker Protection Standard (WPS) and the Pesticide Applicator Certification Rules, the final rules cause significant concerns for states, specifically, implementation timelines, resource demands, and the development of compliance materials. AAPCO acknowledges and appreciates the agency's consideration of many of the concerns expressed by states, however, we believe further modifications would be beneficial to states and the regulated industry while still being protective of human health and the environment. AAPCO supports the delayed implementation as well as modifications of WPS and the Certification Rule to allow specific issues to be addressed. Detailed comments are provided for each rule in the designated sections in this document.

Pesticide Applicator Certification Rule – 40 CFR Part 171; Certification of Pesticide Applicators

States submitted comments to the initial proposed rule, which provided a clear statement of state's role in applicator certification: "It is important to note that AAPCO State Lead Agencies (SLAs) have, since the very earliest days of Federal pesticide applicator certification, taken the lead on many aspects of pesticide applicator training and certification. Through the state/federal cooperative agreement process identified in Sections 26 and 27 of FIFRA, EPA has granted most states primacy in the training, certification and enforcement of state and federal regulations governing the application of restricted use pesticides (RUPs). It is not an exaggeration to say that without the direct involvement of SLAs, the federal government would be unable to adequately administer or enforce FIFRA." (https://aapco.files.wordpress.com/2016/12/aapco-ct-rule-docket-comments-01-20-16.pdf)

While AAPCO was appreciative of the agency listening to and incorporating many of our concerns in the final rule as well as extending the implementation date, we believe some elements should still be considered for further revision. These include sections on definitions, standards for certification of commercial and private applicators, recertification of certified applicators, age limit for certified applicators, and the mandate and timeframe for statutory changes.

Each of the 50 states and territories represented by AAPCO have varying concerns, too numerous for full explanation and specification within these comments. AAPCO strongly encourages the utilization of the State FIFRA Issues Research and Evaluation Group (SFIREG). SFIREG is made up of a state designee appointed to represent the states in each of the ten EPA regions, liaisons from the Office of Pesticide Programs (OPP) and the Office of Enforcement and Compliance Assurance (OECA), a EPA Regions designee, and representatives from various affiliates including the Tribal Pesticide Program Council (TPPC) and provides an ongoing platform for the states and EPA to resolve challenges such as federal rule revisions and implementation. We would like to see SFIREG utilized to fully address pertinent issues in the Certification and WPS rules.

Worker Protection Standard – 40 CFR Part 170

AAPCO requests once more that the U.S. Environmental Protection Agency (EPA) extend the implementation of all revised provisions of the Agricultural Worker Protection Standard (WPS) (40 CFR 170, as published in the Federal Register on November 2, 2015) until January 2018 or until EPA has: (1) finalized and delivered adequate enforcement guidance, educational materials, and training resources to the state lead agencies (SLA); and (2) provided the SLAs the tools and financial resources necessary to effectively implement the rule changes and assist the regulated community with compliance activities or (3) considered further revisions to the final rule.

State Lead agencies have prioritized outreach, compliance assistance and enforcement, in regards to the Worker Protection Standard (WPS) since the initial regulation was enacted in 1992. AAPCO appreciates EPA's program staffs' on-going efforts to develop, revise, finalize, and disseminate complete and accurate training materials, enforcement guidance, compliance materials and other necessary educational resources to assist EPA's state regulatory partners with executing a successful implementation of the final rule changes. We have been working diligently with EPA program staff since the final rule was published in November 2015 to review, improve, and facilitate the expeditious development and delivery of these materials prior to the January 2, 2017 and 2018 implementation dates, respectively. Unfortunately, much of EPA's work to develop and provide these critical compliance and enforcement materials to state regulatory agencies remains incomplete and the release date did not allow for adequate outreach to occur during last year's grower meetings.

Frustrating the development and delivery of these critical training, guidance, and compliance materials was the insertion and final articulation of the Application Exclusion Zone (AEZ), which EPA has publicly acknowledged goes beyond the Agency's stated intent. Many State Agencies expressed concerns in letters to Jim Jones in December of 2015. We understand EPA's Office of General Counsel (OGC) has issued interpretive guidance clarifying the Agency's intent under the final regulation; however, Agency guidance does not carry the weight and authority of a codified federal regulation and does not provide the necessary clarity to assist state regulatory agencies with compliance and enforcement activities. Some State Attorney General's Office has advised that we would be on shaky ground were we to regulate on the basis of interpretative guidance and ignore the plain language of the Standard.

In August 2016, AAPCO sent a letter to EPA's Office of Pesticide Programs. (https://aapco.files.wordpress.com/2016/12/letter-to-jack-housenger-wps_aez.pdf) outlining our concerns with the lack of availability of Train-the-Trainer materials and the OGC's interpretive guidance regarding the AEZ. These concerns along with the lack of implementation materials remain unaddressed and further demonstrate the need for an extension to all pending WPS revisions until January 2018.

One of our greatest concerns is the respirator requirements included in the WPS Revisions. To date, EPA has still not released any compliance assistance materials, interpretative guidance, or enforcement guidance with the complex OSHA Standards regarding respiratory protection that were adopted from 29 CFR 1910.134. Not to mention NIOSH updated their respiratory nomenclature some 22 years ago but due to the lack of coordination between federal agencies, EPA still has not updated pesticide labels to the new terminology used to reference respirator types. This is one of the most challenging areas to explain to growers due to lack of consistency in terms.

In September 2016, the National Association of State Departments of Agriculture (NASDA) membership voted and approved an Action Item[1] during their Annual Meeting urging EPA to delay implementation of the revised WPS provisions. NASDA emphasized the new WPS regulations require significant additional staff time to provide outreach to workers, handlers, applicators, agricultural employers, trainers and other stakeholders. Under the WPS rule changes, trainers will now require retraining, and per EPA's implementation timeline, this retraining must take place during the same period the state agencies are expected to conduct outreach and education to the producers in their states. In addition, the average actual on-site inspection under the former WPS rule averaged three hours in duration, but under the new rule these same inspections are anticipated to require approximately 50% more time due to the enhanced record keeping and site information requirements. These enhanced compliance and record keeping requirements require EPA's timely delivery of educational resources or training materials to assist SLAs and the regulated community in understanding, complying, and enforcing the new requirements.

Compliance and enforcement materials are still being completed and distributed to all the appropriate state enforcement agencies and affected entities. With the effective date of January 2, 2017, there were not enough calendar days or training opportunities available for adequate outreach and educational activities between the SLAs and the regulated community necessary to facilitate a successful implementation of the provisions.

We concur with NASDA's observations that this request to extend the implementation timeline is consistent with EPA's delay in implementation and enforcement to the WPS[2] rule promulgated in 1992, which was implemented in the field in 1995-96. The previous WPS implementation delay was required due to the lack of necessary training materials for pesticide workers and pesticide handlers, compliance assistance materials for agricultural employers, and inspection guidance materials for state regulators. Therefore, as the co-regulatory partner with EPA, for the past 42 years, AAPCO respectfully requests EPA delay the implementation dates of any further revised provisions to the WPS until January 2, 2018.

The implementation and compliance with the WPS rule changes are the responsibility shared by EPA, state regulatory agencies, agricultural employers, trainers, and workers. This requested extension to the implementation timeline is essential to ensure EPA's state regulatory partners and the regulated community have the appropriate information, training, and resources necessary to effectuate a successful implementation

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[1] NASDA Action Item H: *Implementation of Revised Agricultural Worker Protection Standard* (Sept. 2016); http://www.nasda.org/File.aspx?id=45396

[2] 40 C.F.R. §170

of the WPS rule changes. Implementing these regulatory changes without providing the necessary educational resources or training materials to assist state regulatory agencies and the regulated community in understanding the new requirements and how to comply with them is inappropriate and in direct conflict with the fundamental principle of "educate before you regulate."

These are our basic concerns with the revisions of the Worker Protection Standard. Other more specific concerns follow:

Section 170.3 Definitions

Authorized representative should be deleted. This concept would be unwieldy and problematic to SLAs. Without some sort of significant verification process to determine the identities of both the worker/ handler and the authorized representative involved, this activity could result in numerous fraudulent claims of representation and numerous data fishing expeditions by quasi-authorized representatives hoping to cherry pick violations. This would be counterproductive to the regulatory process and the true purpose of the protections intended by this rule.

Section 170.309 Agricultural employer duties

This section should be revised to make the agricultural employer responsible for compliance with only the WPS portions of the pesticide product label, not the entire pesticide product label and labeling. Extending regulatory requirements to issues beyond the WPS is exceeding the intent and scope of this rule. This is a WPS rule, not a rule to make agricultural employers, who may or may not be certified pesticide applicators, responsible for general label compliance. The current FIFRA pesticide applicator certification program is based on label compliance by individuals who have demonstrated competency to apply pesticides. Arbitrarily extending those requirements to non-certified individuals is completely contradictory to that premise. If it is the Agency's intent to develop a shared liability provision for label compliance, that objective should be addressed through a separate and distinct rule addressing all pesticide products or through a revision of FIFRA. It should not be buried in a WPS rule intended to protect workers and handlers. Any provision not specifically targeting protection of workers and handlers should be removed from this rule.

Section 170.309(f)(2)(ii) and (iii)

These sections should be deleted from the emergency information assistance requirements. It is unclear what is meant by "the circumstances of application or use of the pesticide..", and "the circumstances that could have resulted in exposure to the pesticide." And it is equally unclear how this information might be of any real use in providing emergency assistance to a worker or handler. Is there an expectation that an emergency responder is going to act or not act, provide assistance or not, based on a vague description of a possible exposure scenario? Any regulatory requirement, such as this, that does not have a specific valuable purpose serves only as an unnecessary opportunity for a technical violation.

Section 170.309(g)

This section should be modified to make the requirements for training and notification of equipment mechanics applicable only for those agricultural employees who are otherwise workers or handlers at the establishment, not for the local machine shop mechanic. While notifying a mechanic that equipment to be repaired has been used for pesticides is a reasonable

practice, the risk assessment for this individual is undoubtedly significantly different than that for a true agricultural employee. If similar protections are not going to be provided for mechanics of equipment used for non-agricultural applications, this requirement should be removed. It is reasonable to suspect that lawn care equipment or structural pest management equipment may require as much or more repair as agricultural equipment. Keep the focus on those individuals most at risk.

Section170.313 Commercial pesticide handler employer duties (k)(2)(i) and (ii)

These sections should be deleted from the emergency information assistance requirements. See comments for Section 170.309(f)(2)(ii) and (iii).

Section 170.401 Training requirements for workers (c)(4)(ii)

This section should be revised to reflect that there is no distinction or difference between a trainer eligible to train workers or handlers. As proposed, this adds an unnecessary level of complication and confusion to a rule that is already too complicated and confusing. It is logically inconsistent to believe that the basic skill set of a trainer of workers is significantly different from that of a trainer of handlers. Neither EPA nor SLAs are qualified or in a position to be able to evaluate the proficiency of one type of trainer versus another. Those distinctions are very subjective and beyond the capabilities of those responsible for compliance with this rule. In addition, the logic is further turned upside down when one considers that a certified pesticide applicator is legally capable of training and supervising a non-certified applicator to apply restricted use pesticides around people and into the environment, but is not capable of training a worker about how to protect himself from pesticide exposure.

Section 170.405 Entry restrictions associated with pesticide applications

All references in this section, corresponding tables in this section, and other sections of this rule to 'other persons' should be deleted. While limiting pesticide exposure to all persons is certainly a good thing that should be supported and promoted whenever possible, extending protections of this rule to individuals who are not agricultural workers or handlers, if necessary, should be accomplished by means other than the WPS rule. Again, creating protections for 'other persons' in a WPS rule appears to be exceeding the scope and intent of the rule, even if it seems like a good idea. In addition, if such provisions are warranted based on the risk assessments performed for 'other persons', it seems that non-agricultural products should receive the same consideration as is being proposed for agricultural WPS products.

The concept of a regulatory requirement to keep individuals out of varying widths of areas surrounding treated areas seems quite difficult for an agricultural employer to implement and next to impossible for an SLA trying to ensure compliance. The logic behind such a safety measure is understandable and supportable, but making this a regulatory requirement with an expectation of compliance monitoring and enforcement is not.

170.405 (a)-(b) Application Exclusion Zone. As referenced above, the final rule includes an "AEZ". This portion of the rule is so confusing that EPA needed several pages of interpretive guidance as well as interpretive guidance from the Office of General Counsel. This confusing portion of the regulation was not part of the original proposal. The AEZ does not provide any additional protections. Pesticide labels all currently read, "Do not

apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application."

Section 170.409 Oral and posted notification of worker entry restrictions (b)(1)(ii)

This section should be revised to add to the end of the posting timing requirement, "unless weather or circumstances beyond the control of the applicator or agricultural employer delays the application." There are a variety of provisions within the existing rule that can be considered somewhat subjective. Adding a provision that recognizes the realities of weather and planning seems reasonable to avoid additional unnecessary technical violations.

Section 170.409 (b)(1)(iv)

The three day after application or REI posting sign removal requirement in this section should be deleted. If protection of workers and handlers is truly the intent of this rule, the violation of the posting provision should be allowing a worker or handler to enter a posted field, regardless of the application date or the REI. Creating the possibility of a technical violation for failure to remove a posting sign by a specified date adds an unnecessary level of complication without adding any real additional protections for the workers or handlers. The impetus to remove the posting signs to allow re-entry and return to unimpeded agricultural operations will be with the agricultural employer. A similar state regulatory requirement in Indiana for removal of lawn posting signs was rescinded after ten years of rule implementation because of the realization that it was impossible to monitor and provided no additional protections.

Section 170.501 Training requirements for handlers (c)(1)

This section should be revised to require only that the trainer be available during the training session rather than continuously present throughout the entire training. If training is being facilitated by an approved video or some other media that does not require continuous attention by the trainer, it is of little value that the rule create another opportunity for a technical violation that adds unproven additional protections to workers or handlers. The important point would seem to be that the trainer be available immediately following the presentation for questions and comments. Even face-to-face trainers will often request that trainees hold questions until the end of the session so as to not disrupt the flow and distract other trainees.

Section 170.501(c)(2)(iv),(vii), and (ix)

These items should be deleted from required training elements for handlers. Although AAPCO strongly supports training pesticide users about these elements, this type of training requirement is already covered in applicator certification training and in non-certified applicator supervision requirements. That is where training requirements for pesticide applicators should be addressed, not inserted through some back door requirement of a WPS rule that addresses only agricultural pesticides

Section 170.503 Knowledge of labeling application-specific, and establishment-specific information for handlers

This section should be deleted. See the comments for Section 170.501(c)(2) above. Again, requirements like these belong in a certification standards and supervision rule, not a WPS rule targeting solely agricultural workers, handlers, and pesticide products.

Section 170.507 Personal protective equipment (b)(5)(iii)

The requirement for contaminated glove liners to be disposed of in accordance with federal, state, or local regulations should be deleted. If such disposal regulations actually exist, adding this provision in a WPS rule adds no value or regulatory authority. It just begs the question of what those regulations may be and adds another technical violation to the WPS rule that really needs to applicable to all pesticides. Eliminate the additional confusion. States and localities can address disposal requirements through state or locality specific regulations as they see fit. Again, this is a worker/handler protection rule, not a disposal compliance rule.

Section 170.507 (d)(2)

The reference to PPE disposal according to federal, state, or local regulations should be deleted. See comments above for Section 170.507(b)(5)(iii).

Section 170.601 Exemptions (a)(2)

The reference to "other persons" should be deleted. See comments for Section 170.405.

Request for specific comment in the proposed rule, AAPCO believes that the below comments were not addressed in the final rule.

Expand the Content of Worker and Handler Pesticide Safety Training

Because this proposed rule is a worker protection rule, AAPCO believes the following training points should not be considered in the final proposal: 1) environmental concerns, 2) information on proper application and use of pesticides, 3) requirement for handlers to follow all pesticide label directions, and 4) format and meaning of all information contained on pesticide labels and labeling, environmental concerns, such as drift, runoff, and wildlife hazards. While OISC strongly supports these training requirements for non-certified applicators being supervised by certified applicators, we believe that is exactly the mechanism that should be utilized to ensure that pesticides are being applied legally and with environmental safety in mind. These items do not relate directly to worker and handler safety and protection. This is a WPS rule, not an applicator certification rule. By including these training points in WPS, it appears as if the Agency is attempting to expand the regulatory liability of handlers beyond the intent and scope of the rule. It should be noted that Indiana already requires training and competency examination of most agricultural handlers (non-certified applicators being supervised by certified applicators).

Posted Notification Timing & Oral Notification

AAPCO opposes any oral notification if the Agency truly expects the requirement to be inspected and enforceable. We believe that it would be impossible to effectively enforce, with or without a recordkeeping requirement. In addition, AAPCO is opposed to any additional recordkeeping requirement, since such records would be costly to keep and are susceptible to fraud. A record does not ensure that oral notification actually occurred, only that a record was created.

PESTICIDE GENERAL PERMIT (PGP) UNDER THE NATIONAL POLLUTANT DISCHANGE ELIMINATION SYSTEM (NPDES)

As specified in the Fact Sheet providing Notice of the 2016 NPDES PGP, Section I. Background (file:///C:/Users/brabe/Downloads/EPA-HQ-OW-2015-0499-0117.pdf) provides the information related to Section 301(a) of the Clean Water Act (CWA) requiring NPDES permits and explanation of the court determinations leading to EPA requiring the PGP effective October 31, 2011. The document also confirms the purpose of FIFRA's statutory framework is:

> *"to ensure that when used in conformance with FIFRA labeling directions, pesticides will not pose unreasonable risks to human health and the environment. All new pesticides, for which registration is required, must undergo a registration procedure under FIFRA during which EPA assesses a variety of potential human health and environmental effects associated with use of the product. Under FIFRA, EPA is required to consider the effects of pesticides on the environment by determining, among other things, whether a pesticide* "will perform its intended function without unreasonable adverse effects on the environment,*" and whether* "when used in accordance with widespread and commonly recognized practice [the pesticide] will not generally cause unreasonable adverse effects on the environment.*" 7 U.S.C. 136a(c)(5). In performing this analysis, EPA examines the ingredients of a pesticide, the intended type of application site and directions for use, and supporting scientific studies for human health and environmental effects U.S. Environmental Protection Agency 2016 NPDES Pesticide General Permit Fact Sheet 3 and exposures. The applicant for registration of the pesticide must provide specific data from tests done according to EPA guidelines. When EPA approves a pesticide for a particular use, the Agency imposes restrictions through labeling requirements governing such use. The restrictions are intended to ensure that the pesticide serves an intended purpose and avoids unreasonable adverse effects."*

AAPCO agrees with the need for an effective regulatory mechanism to protect waters of the U.S. from harm by pesticides that may intentionally or inadvertently be discharged into those waters. However, AAPCO firmly believes the NPDES Pesticide General Permit (PGP) requirements are duplicative of federal pesticide registration requirements without providing additional tangible water quality protections and requirements for a NPDES permit for pesticide application should be repealed. Pesticide labels are the primary tool which should be used to add additional safeguards or prohibitions to ensure applicators are aware and water quality is protected.

The permit creates additional overlapping and duplicative state regulatory mechanisms at a time when federal and state resources for implementation and enforcement are scarce or non-existent. Specifically, the proposed permit does not adequately recognize extant pesticide regulatory mechanisms and safeguards that can be appropriate for consideration as "control measures" to be relied upon to meet non-numeric technology-based effluent limitations in the permit. For example, many states are already addressing the integrated pest management and best management practice technologies with pesticide applicators through the state applicator certification process.

In addition, state water agencies charged by state law with the administration and enforcement of state NPDES permitting programs have not been funded for the tremendous additional workload

being created by this permit requirement. The same is true for EPA Regional offices which are responsible for the program in states without primacy for NPDES. In some cases a single staff person is responsible for the entire NPDES permit applications, review and compliance. Add to this difficulty, most of these same permitting agencies have received relatively little training and have almost no experience in the enforcement of pesticide use, necessary for adequate determinations of compliance with a PGP.

Compliance with the pesticide label is a cornerstone to this permitting initiative. EPA needs to clearly recognize and capture the value and benefits already formally utilized from the state lead pesticide agency expertise in the administration and enforcement of FIFRA. Removing the authority overlap would provide clearer regulatory direction and relieve unnecessary regulatory burden to persons and entities utilizing a pesticide and strengthening the authority to regulate pesticides as intended under FIFRA.

MINIMUM RISK PESTICIDE EXEMPTION

In 1996, the agency exempted minimum risk pesticides from product registration in order to reduce cost and regulatory burden. This exemption shifted costs and the regulatory burden to state lead agencies, many of which require state registration. States are finding more products in the marketplace which do not meet the federal requirements for exemption from registration, but due to the low priority assigned by the agency for violations, appropriate and timely action by the agency is not pursued. The exemption should either be repealed or the agency should place a higher priority for enforcement on products which do not meet the federal requirements for exemption.

USE OF FEDERAL CREDENTIALS BY STATE EMPLOYEES TO CONDUCT FEDERAL PRODUCT INSPECTIONS

The FIFRA Sections 8 and 9 require that inspection of pesticide establishments by officers or employees of EPA or of any State duly designated by the Administrator be performed by an individual with "appropriate credentials". Neither FIFRA nor any of the CFR promulgated under FIFRA designates what an "appropriate credential" may be. EPA policy has been that an appropriate credential means a federally issued FIFRA credential.

AAPCO agrees that for purposes of uniformity and consistency between federal inspectors and state authorized inspectors, issuance of a federal FIFRA credential seems to be optimal. However, many states already have state authority, credentials, and staff training necessary to conduct federal product compliance inspections. Some state authorities may actually exceed federal authorities afforded state employees with federal credentials, making the federal credential a nice, but not required "appropriate credential". To compound the frustration with the unnecessary duplication, the process established by EPA to issue federal credentials is cumbersome, inefficient, time consuming, and unreliable. These short comings continue to exist in spite of repeated efforts by States and EPA to improve the process. Regardless, EPA remains committed to the requirement for State inspectors, in spite of requests for documentation of need, legal precedence, or a clear explanation of the value added component to the

regulatory process. This is a situation that could be improved by nothing more than an operating policy change.

TECHNOLOGY UTILIZATION AND ENHANCEMENTS

AAPCO fully supports EPA in their efforts towards the development and utilization of technology in the pesticide registration, state grant reporting and enforcement tracking processes and dedicating resources to fund these efforts. The implementation of technology will increase efficiencies, provide for more consistency in data collection and enhance reporting capabilities and information exchange between states and the EPA.

State pesticide regulatory programs conduct reviews of pesticide labels for registration and compliance, inspections of pesticides in the channels of trade, and certification and inspection of pesticide applicators. A critical component of all these efforts are pesticide labels, and the specific language on these labels. Accurate and timely information about these labels is absolutely necessary for effective compliance programs. Efforts such as the Pesticide Smart Label program and Label Comparison Smart App will enhance monitoring of pesticide label compliance by field operations performed by the states and result in significant efficiencies for monitoring compliance during state registration reviews.

STATE TRIBAL ASSISTANCE GRANT (STAG) FUNDING

With the proposed reductions to the EPA Budget, AAPCO would be amiss if it did not offer that any reductions to State Tribal Assistance Grants will make it difficult if not impossible for some States to continue enforcement of FIFRA. States have historically had to work with increasing mandates under reduced STAG funding available for pesticide program cooperative agreements. Should there be additional reductions to STAG funds, States will be faced with limiting participation or in some cases, returning regulatory responsibilities to the agency.

While we understand fiscal decisions must be made, as co-regulators sharing the mission of protecting human health and the environment, we encourage the agency to prioritize efforts which directly accomplish that core mission such as providing adequate resources (staffing, technology, training) to ensure federal registration decisions are sound and fully considered not just on paper but in the real world as well as ensure states are provided adequate resources for program mandates. Resources should be limited where efforts outside of this scope do not provide an identifiable benefit to state level regulatory, education and outreach, or research efforts such as the designed for the environment pilot pesticide program.

AAPCO would like to express our support for and importance of continued funding for the Pesticide Regulatory Education Program (PREP), the Pesticide Inspector Residential Training (PIRT) and the State FIFRA Issues and Research Evaluation Group. Each of these has contributed to improving regulatory decisions, priorities, and program implementation, for example, the development and implementation of performance measures for the enforcement program. PREP, PIRT and SFIREG provide an opportunity to increase the depth of understanding and consistency in implementation of FIFRA for both state and EPA staff carrying out the pesticide program objectives.

Thank you for the opportunity to provide comments. Please feel free to contact me or other members of the AAPCO Board for further information or discussions. Contact information can be found at www.aapco.org.

Message

From: Colleen Willard [willard@ncga.com]
Sent: 11/17/2017 2:24:43 PM
To: Sands, Jeffrey [sands.jeffrey@epa.gov]
Subject: RE: Meeting Request

Thanks, Jeff! Have a great weekend!

Colleen

From: Sands, Jeffrey [mailto:sands.jeffrey@epa.gov]
Sent: Friday, November 17, 2017 9:20 AM
To: Colleen Willard <willard@ncga.com>
Cc: Subramanian, Hema <Subramanian.Hema@epa.gov>
Subject: RE: Meeting Request

Good morning Colleen,

That proposed time for Friday, December 8 at 10:00AM will work on our end. We will meet in 2415 North Building.

Cc'd is Hema Subramanian that works with me in the Ag Advisor's office. She will join us for the meeting.

Thanks and I hope you enjoy the upcoming weekend.

Best,
Jeff

From: Colleen Willard [mailto:willard@ncga.com]
Sent: Thursday, November 16, 2017 3:51 PM
To: Sands, Jeffrey <sands.jeffrey@epa.gov>
Subject: RE: Meeting Request

Hi Jeffrey,

Thank you for your email and willingness to meet with Mr. Skunes. Is 10:00 a.m. on December 8th an agreeable time for you? Mr. Skunes is interested in discussing pesticides and the renewable fuel standard.

Best,
Colleen

Colleen M. Willard
Director, Public Policy
National Corn Growers Association
20 F Street NW, Suite 600
Ex. 6 Direct
willard@ncga.com

From: Sands, Jeffrey [mailto:sands.jeffrey@epa.gov]
Sent: Thursday, November 16, 2017 9:11 AM

To: Colleen Willard <willard@ncga.com>
Subject: Meeting Request

Good morning Colleen,

Hope this note finds you well. I wanted to touch base regarding your meeting request for NCGA President Kevin Skunes.

Due to previous commitments on the Administrator's calendar for December 7&8, he will not be able to join for a meeting with Mr. Skunes. I would, however, like to offer my time to meet with NCGA at your preference for either of those days. Please let me know of a time on the 7th&8th that works best for your team and also any issues you would like to discuss so I can work to make sure the meeting is fully accommodated from our end.

I appreciate your understanding and consideration, I look forward to hearing from you in the near future.

Best,

Jeffrey Sands
Senior Advisor to the Administrator for Agriculture Policy
1200 Pennsylvania Ave, NW
2415 WJC North
Washington, DC 20460
(202) 564-2263

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Appointment

From: Ziobro, Joseph [Ziobro.Joseph@epa.gov]
Sent: 10/23/2017 6:08:20 PM
To: kim@aginspirations.com; donp@fb.org; danielleq@fb.org; tom.hebert@bayardridge.com; Chad.Frahm@rosedmi.com; John.Monaghan@dairy.org; karen.scanlon@dairy.org; syager@beef.org; apeterson@chickenusa.org; kbillings@ncfc.org; lvandoren@ncfc.org; cdetlefsen@nmpf.org; Michael Formica [formicam@nppc.org]; dwells@turkeyfed.org; cgarrison@garrisongroup.com; pbredwell@poultryegg.org; crichter@thepolicygroup.com; Ex. 6 ; kwesterbeek@smithfield.com; cal@creightonbrothersllc.com; billk@cooperfarms.com; jamie.burr@tyson.com; cousercattle@iowatelecom.net; iowariverranch@heartofiowa.net; tom.mcdonald@jbssa.com; rholladay@cmfoods.com; tmbass@montana.edu; mrisse@uga.edu; Glenn Carpenter [glenn.carpenter@wdc.usda.gov]; gary.kelman@maryland.gov; Woodmansey, Kent [Kent.Woodmansey@state.sd.us]; Ferris, Lena [Ferris.Lena@epa.gov]; Sawyers, Andrew [Sawyers.Andrew@epa.gov]; Brennan, Ross [Brennan.Ross@epa.gov]; Molloy, Jennifer [molloy.jennifer@epa.gov]; Subramanian, Hema [Subramanian.Hema@epa.gov]; Jones, Kristin [jones.kristin@epa.gov]; Best-Wong, Benita [Best-Wong.Benita@epa.gov]; Wall, Tom [Wall.Tom@epa.gov]; Pollins, Mark [Pollins.Mark@epa.gov]; Theis, Joseph [Theis.Joseph@epa.gov]; Shenk, Kelly [shenk.kelly@epa.gov]; Robertson, Duane [Robertson.Duane@epa.gov]; Winn, G. Dean [winn.gerald@epa.gov]; Socha, Julianne [socha.julianne@epa.gov]; Burdett, Cheryl [burdett.cheryl@epa.gov]; Rush, Randall [Rush.Randall@epa.gov]; Saunders, Jerry [Saunders.Jerry@epa.gov]; Hamilton, Denise [Hamilton.Denise@epa.gov]; Cooper, WilliamF [Cooper.WilliamF@epa.gov]; Galloway, Carol [Galloway.Carol@epa.gov]; Perrin, Rebecca [Perrin.Rebecca@epa.gov]; Miller, Amy [Miller.Amy@epa.gov]; Mitschele, Becky [Mitschele.Becky@epa.gov]; Peak, Nicholas [Peak.Nicholas@epa.gov]; bhammerich@coloradolivestock.org; Winnett, Steven [winnett.steven@epa.gov]; Heinemann, Kristina [Heinemann.Kristina@epa.gov]; Flournoy, Karen [Flournoy.Karen@epa.gov]; Hall, Lynda [Hall.Lynda@epa.gov]; Larsen, Erika [Larsen.Erika@epa.gov]; Mortensen, Ginah [mortensen.ginah@epa.gov]; Greg Zwicke [greg.zwicke@ftc.usda.gov]; mhart@beef.org; LUEHE, DOUGLAS [luehe.douglas@epa.gov]; aneuhart@BrwnCald.com; MSponsler@coloradocorn.com; justin.miller@jbssa.com; brad.lubbers@jbssa.com; ben@tcfa.org; empiredairy@me.com; jslutsky@lalunadairy.com; Sandy.Means@gnb.usda.gov; lisa.devore@state.co.us; Sands, Jeffrey [sands.jeffrey@epa.gov]; jim_cheatham@nps.gov
CC: Paul Bredwell [pbredwell@uspoultry.org]; Frahm, Chad [Chad.Frahm@dairy.org]; Hou, James [Hou.James@epa.gov]; Ismert, Peter [Ismert.Peter@epa.gov]; Chad DeVolin [chad.devolin@state.co.us]; Magruder, DeMara [Magruder.Demara@epa.gov]; Denton, Loren [Denton.Loren@epa.gov]; Ex. 6 Ashley McDonald [amcdonald@beef.org]; Zobrist, Marcus [Zobrist.Marcus@epa.gov]; Nitsch, Chad [Nitsch.Chad@epa.gov]; jeffrey.porter@gnb.usda.gov; jayolsen@utah.gov; Sharpe, Kristinn [Sharpe.Kristinn@epa.gov]; Corona, Elizabeth [Corona.Elizabeth@epa.gov]; Jill Heemstra [jill.heemstra@unl.edu]; Rathbone, Colleen [Rathbone.Colleen@epa.gov]; Gioffre, Patricia [Gioffre.Patricia@epa.gov]; Jennings, Kim [Jennings.Kim@epa.gov]; Greenwald, Kathryn [Greenwald.Kathryn@epa.gov]; Rise, David [rise.david@epa.gov]; Bahk, Benjamin [Bahk.Benjamin@epa.gov]

Subject: Animal Agriculture Discussion Group Meeting
Attachments: AADG Oct 2017 Denver Mtg_Final Agenda.pdf; AADG Oct 2017 Denver Mtg_Participants List final.pdf; Berkshire AADG Dinner Menu.pdf
Location: 3203 Quebec St, Denver, CO 80207

Start: 10/23/2017 7:30:00 PM
End: 10/25/2017 9:30:00 PM
Show Time As: Tentative

Animal Agriculture Discussion Group Meeting, Denver Colorado – Oct. 23 – 25, 2017

Dear Animal Agriculture Discussion Group:

We look forward to seeing you next week in Colorado. Attached are the following:

- Final Agenda, with webcast/teleconference and logistical information
- Participants list (with RSVPs as of 10/19 morning)
- Menu for dinner on Tuesday the 24th

Please note that the times of some sessions in the agenda have shifted slightly.

Onsite Contacts:

Kelly Shenk, Agricultural Advisor, EPA Region 4: shenk.kelly@epa.gov, (cell) Ex. 6
Ross Brennan, Acting Chief of EPA Rural Branch: Brennan.ross@epa.gov, (cell) Ex. 6

Thank you.

- **Hotel and Meeting Location**: Doubletree by Hilton Hotel Denver, 3203 Quebec St, Denver, CO 80207 – **Grand Ballroom IV** (*not Grand "Ballroom I" as listed on the agenda*)

- **Transportation from/to Airport**:
    - Train – The RTD University of Colorado A Line train runs from Denver Airport to Central Park Station for $9 each way, and the hotel provides a complimentary shuttle from the station (call the hotel at 303-321-3333 when you arrive at the platform to request shuttle).Info at: http://www.rtd-denver.com/a-line.shtml
    - Uber - $23-30 each way; Taxi - Approximately $55 each way

- **Tours:** Oct. 25
    - Stop 1: Empire Dairy, Wiggins, CO
    - Stop 2: JBS/Five Rivers Cattle Feeding, Kersey, CO
    - Transportation (charter bus) will be provided from meeting location to tour stops and back.

- **Meals:** Per federal policies, EPA is restricted from providing refreshments for this meeting. However, the hotel has cafés and restaurants with food and beverages available for purchase, both onsite and nearby. We will also select locations for some group meals as indicated in the agenda, so please indicate which meeting sections/meals you plan to attend on the registration website, so we can ensure capacity. Boxed lunches with sandwiches/wraps will be pre-ordered for the Wednesday tour, so please also indicate in your registration **by September 23rd** if you have any special dietary preferences or restrictions for this meal. Federal employees should to bring cash if interested in participating in the boxed lunch (amount will be announced soon).

- **Telephone and Web-Conference Information:**
    - **Phone Conference Line for Audio**: Dial Ex. 6 Passcode Ex. 6
    - **Adobe Webcast Link:** Ex. 6

For additional information, please contact Subramanian.hema@epa.gov or Ziobro.joseph@epa.gov

Animal Agriculture Discussion Group
October 23-25, 2017 Meeting
Denver Area, Colorado
Agenda and Logistical Information *(Final)*

Meeting and Hotel Location:

Doubletree by Hilton Hotel Denver
3203 Quebec St., Denver, CO 80207
Grand Ballroom I
Website
Map

Note: There are multiple DoubleTree hotels in close proximity on this same road. Be sure to use the street address to identify the correct location: **3203 Quebec St., Denver, CO 80207**.

Transportation from Airport:

Train – The RTD University of Colorado A Line train runs from Denver Airport to Central Park Station for $9 each way, and the hotel provides a complimentary shuttle from the station (call the hotel at 303-321-3333 when you arrive at the platform to request shuttle).
Info at: http://www.rtd-denver.com/a-line.shtml

Uber - $23-30 each way; ***Taxi*** - Approximately $55 each way

Dress Code: Business casual for the meetings Monday and Tuesday. Outdoor-friendly clothes (boots, jacket/layers, etc.) for the farm tours on Wednesday.

Meals/Refreshments:

Per federal policies, please note that EPA is restricted from providing refreshments for this meeting. However, the hotel has cafés and restaurants with food and beverages available for purchase, both onsite and within walking distance.

Breakfasts and Mon/Tue lunches will be on your own.

Boxed lunches have been pre-ordered to be catered on Wednesday during the tour; federal employees should bring cash to cover the cost of their lunches on this day (amount will be announced).

An optional networking dinner will be located at the Berkshire Restaurant on Tuesday evening, within 10 minutes walking distance of the hotel. The restaurant is offering a special/limited menu for our dinner, which is attached to the calendar invitation.

Onsite Contacts:

Kelly Shenk, Agricultural Advisor, EPA Region 4: shenk.kelly@epa.gov, (cell) Ex. 6
Ross Brennan, Acting Chief of EPA Rural Branch: Brennan.ross@epa.gov, (cell) Ex. 6

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Webcast Information (for 10/23 and 10/24):

Link: Ex. 6

Phone Conference Line for Audio: Dial Ex. 6 Passcode Ex. 6

Adobe Connect Webcast Instructions

Use this link to access visual presentations: Ex. 6

Audio will be available only by phone conference line: **Dial** Ex. 6 **Passcode** Ex. 6

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Final Agenda

Monday, October 23 - MEETING, DAY 1

Morning flights in, lunch on your own

1:30 pm 2:00 – 2:15 pm	Arrivals (Grand Ballroom I) **Introductions**
2:15 – 2:40 pm	**Welcome, Preliminary Remarks** - *Doug Benevento, EPA R8 Regional Administrator (tentative)* - *Don Brown, Colorado Department of Agriculture Commissioner*
2:40 – 2:50 pm	**Vision for the Meeting, General Updates, Announcements** - *Hema Subramanian, EPA Water Permits Division/Rural Branch*
2:50 – 3:30 pm	**Regional Spotlight: Animal Agriculture and Collaboration in Colorado** • **Colorado Monitoring Framework - Agricultural Task Force** http://coloradolivestock.org/agricultural-task-force/ - *Andrew Neuhart, Brown and Caldwell and Mark Sponsler, Colorado Corn*
3:30 – 3:40 pm	*Break*
3:40 – 4:40 pm	• **Rocky Mountain National Park Initiative** https://www.nature.nps.gov/air/Permits/ARIS/docs/romoNFactSheetV11200505Final.pdf http://www.rmwarmingsystem.com/ - *Bill Hammerich, Colorado Livestock Association* - *James Hou, EPA Region 8 Air Program* - *Justin Miller, JBS Five Rivers Cattle Feeding* - *John Slutsky, La Luna Dairy* - *Lisa Devore, Colorado Department of Public Health and Environment*
4:40 – 5:15 pm	***What can we learn from these local/regional models that could help inform the direction of the AADG?*** - *Discussion led by Kelly Shenk, EPA Region 3 Agricultural Advisor*
5:15 – 5:30 pm	**Re-cap, Wrap up, and Logistics Ahead** - *Hema Subramanian, EPA Water Permits Division/Rural Branch*

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Tuesday, October 24th - MEETING, DAY 2

8:15 – 8:30 am	**Welcome back** - *Remarks by Andrew Sawyers, EPA Office of Wastewater Management Director and Marcus Zobrist, EPA Office of Wastewater Management - Water Permits Division Acting Director* - *Introduction of Jeffrey Sands, EPA Senior Advisor to the Administrator for Agriculture Policy*
8:30 – 8:45 am	**EPA Agency Updates**
8:45 – 9:00 am	**EPA's Smart Sectors Program** https://www.epa.gov/smartsectors - *Kristinn Sharpe, EPA Office of Policy, Smart Sectors, Agriculture Lead* - *Elizabeth Corona, EPA Office of Policy, Smart Sectors, Agriculture Backup Lead*
9:00 – 9:15 am 9:15 – 10:00 am	**Updates on Ongoing Collaborations** • **Animal Ag Education Project** ○ **Updates since launch of EPA Overview Module** Website: https://articles.extension.org/pages/73649/animal-agriculture-manure-management-and-water-quality - *Kelly Shenk, EPA Region 3 Agricultural Advisor* ○ **NRCS module preview and discussion** Links to draft module *(please do not share yet beyond this group)*: Section 1: https://articles.extension.org/preview/page/create/102424 Section 2: https://articles.extension.org/preview/page/create/102577 - *Glenn Carpenter, USDA NRCS Animal Husbandry National Leader*
10:00 – 10:10 am	*Break*
10:10 – 10:30 am 10:30 – 11:00 am 11:00 – 11:15 am	○ **National Cattlemen's Beef Association's module preview and discussion** - *Scott Yager, National Cattlemen's Beef Association* ○ **U.S. Poultry & Egg Inspection/Conservation module preview and discussion** - *Paul Bredwell, U.S. Poultry & Egg Association* ○ **Next steps for the Animal Ag Education Project**

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11:15 – 11:45 am	• **Nutrient Recycling Challenge update** - *Joseph Ziobro, Hema Subramanian, and Kristin Jones, EPA Water Permits Division/Rural Branch*
11:45 – 1:15 pm	*Lunch on your own*
1:15 – 2:30 pm	**Findings from EPA and State Water Quality Permitting Inspections** - *Carol Galloway, EPA Office of Compliance and National Agriculture Center*
2:30 – 3:00 pm 3:00– 3:20 pm	**Industry-led sustainability initiatives** • **Featured initiative: U.S. Roundtable on Sustainable Beef** https://www.usrsb.org/ - *Ashley McDonald, National Cattlemen's Beef Association* **Brief updates on other industry sustainability initiatives**
3:20 – 3:30 pm	*Break*
3:30 – 5:00 pm	**Working session on next steps for the AADG, ways to build on its success** • Breakout discussions (45 mins) – *webcast will break* • Re-convene to map out vision (45 mins) – *webcast will resume*
5:00 – 5:15 pm	**Wrap-up, Takeaways, Action Items** **Closing Remarks, Adjourn**
6:00 – 7:30 pm	*Optional networking dinner* **The Berkshire** 7352 29th Ave. Denver, CO 80238 Directions: Walk 0.3 miles south on Quebec St. from the hotel, turn left on 29th St. Restaurant will be on the right.

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Wednesday, October 25th – TOUR DAY

(There will be no webcast for this day.)

7:15 am	**Board bus, travel to Empire Dairy**
9:00 – 10:30 am	**Empire Dairy** Wiggins, CO
10:30 – 11:00	**Travel to JBS/Five Rivers**
11:00 am – 1:30 pm	**JBS/Five Rivers Cattle Feeding** Kersey, CO *Boxed lunches will be provided onsite.*
3:00 pm	**Arrive back at hotel**

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Animal Agriculture Discussion Group
October 23-25, 2017 Meeting
Denver Area, Colorado
Participants List

Y - accepted calendar invite, T - tentative, N - declined, P - Phone — *Tallies below include Yes and Tentative*

First Name	Last Name	Affiliation	New/ Guest	RSVP Mtg	RSVP Tue lunch	RSVP Tue dinner	RSVP Tour	Attended
TOTALS				**54**	**43**	**39**	**37**	
Ag Associations/National Orgs				**7**	**5**	**5**	**5**	
Kim	Bremmer	American Agri-Women						
Don	Parrish	American Farm Bureau Federation						
Danielle	Quist	American Farm Bureau Federation		N				
Tom	Hebert	Bayard Ridge Group		P				
Chad	Frahm	Innovation Center for U.S. Dairy / Dairy Management Inc.		T				
John	Monaghan	Innovation Center for U.S. Dairy / Dairy Management Inc.		N				
Karen	Scanlon	Innovation Center for U.S. Dairy / Dairy Management Inc.		Y	Y	T	Y	
Scott	Yager	National Cattlemen's Beef Association		Y	Y	Y	Y	
Mary Thomas	Hart	National Cattlemen’s Beef Association		Y	Y	Y	Y	
Ashley	McDonald	National Cattlemen's Beef Association	Guest	Y	N	N	N	
Ashley	Peterson	National Chicken Council						
Kelsey	Billings	National Council of Farmer Cooperatives		N				
Lisa	Van Doren	National Council of Farmer Cooperatives						
Clay	Detlefsen	National Milk Producers Federation						
Michael	Formica	National Pork Producers Council		N	N	N	N	
Damon	Wells	National Turkey Federation						
Charlie	Garrison	The Garrison Group, LLC						
Paul	Bredwell	U.S. Poultry and Egg Association		Y	Y	Y	Y	
Christian	Richter	The Policy Group		Y	Y	Y	Y	
Steve	George	United Egg Producers						
David	Inall	United Egg Producers						
Producers/Local Contacts				**13**	**11**	**10**	**9**	
Doug	Young	Spruce Haven Farm (NY)		Y	Y	T	Y	
Kraig	Westerbeek	Smithfield (NC)		Y	Y	N	N	
Cal	Jackson	Creighton Brothers (IN)		N				
Bill	Knapke	Cooper Farms (OH)		Y	Y	Y	N	
Jamie	Burr	Tyson Foods (AR)		Y	Y	Y	Y	
Bill	Couser	Couser Cattle Co. (IA)		Y	Y	Y	Y	

First Name	Last Name	Affiliation	New/ Guest	RSVP Mtg	RSVP Tue lunch	RSVP Tue dinner	RSVP Tour	Attended
Dave	Petty	Iowa River Ranch (IA)		Y	Y	Y	Y	
Tom	McDonald	JBS Five Rivers Cattle Feeding LLC (TX)		Y	Y	Y	Y	
Justin	Miller	JBS Five Rivers Cattle Feeding LLC (CO)	Guest	Y	Y	Y	Y	
Brad	Lubbers	JBS Five Rivers Cattle Feeding LLC (CO)	Guest	Y	Y	T	Y	
Ben	Weinheimer	Texas Cattle Feeders Association	Guest	Y	Y	Y	Y	
Bill	Hammerich	Colorado Livestock Association	Guest	Y	Y	T	Y	
Rob	Holladay	Cal-Maine Foods, Inc. (MS)		P				
Norm	Dinis	Empire Dairy (CO)	Guest	Y				
Jon	Slutskey	La Luna Dairy, Inc. (CO)	Guest	Y				
		Academia		**0**	**0**	**0**	**0**	
Thomas	Bass	Montana State University Extension						
Mark	Risse	University of Georgia						
Jill	Heemstra	University of Nebraska Extension/Livestock and Poultry Environmental Learning Center	Guest	P				
		USDA		**3**	**3**	**3**	**3**	
Rafael	Guerrero	USDA NRCS, Deputy Chief for Science & Technology	New					
Glenn	Carpenter	USDA NRCS, Animal Husbandry National Leader		Y	Y	Y	Y	
Jeff	Porter	USDA NRCS, Animal Manure and Nutrient Management Team Leader	Guest	P				
Sandra	Means	USDA NRCS	Guest	Y	Y	Y	Y	
Greg	Zwicke	Colorado NRCS, Air Quality Engineer	Guest	Y	T	T	Y	
		States		**4**	**2**	**1**	**2**	
Gary	Kelman	Maryland Dept. of the Environment		N				
Kent	Woodmansey	South Dakota Dept. of Environment & Natural Resources		N				
Chad	DeVolin	Colorado Department of Public Health and Environment - Environmental Agriculture, Program Coordinator	Guest	Y	Y	N	Y	
Lisa	Devore	Colorado Department of Public Health and Environment	Guest	Y				
Don	Brown	Colorado Department of Agriculture, Commissioner	Guest	Y				
Jay	Olsen	Utah Department of Agriculture and Food	Guest	Y	Y	Y	Y	
		EPA Headquarters		**9**	**10**	**10**	**8**	
Jeffrey	Sands	Office of the Administrator, Senior Advisor to the Administrator for Agriculture Policy	New	Y	Y	Y	N	
Lena	Ferris	Office of the Administrator, Designated Federal Officer to the Farm, Ranch, and Rural Communities Federal Advisory Committee		N				

First Name	Last Name	Affiliation	New/ Guest	RSVP Mtg	RSVP Tue lunch	RSVP Tue dinner	RSVP Tour	Attended
Chad	Nitsch	Office of the Administrator, Intergovernmental Relations | State and Regional Partnerships	New	P				
Benita	Best-Wong	Office of Water, Acting Principal Deputy Assistant Administrator						
Andrew	Sawyers	Office of Water, Office of Wastewater Management, Director		Y	Y	T	N	
Marcus	Zobrist	Office of Water, Office of Wastewater Management, Water Permits Division, Acting Director	New	Y	Y	T	Y	
Ross	Brennan	Office of Water, Office of Wastewater Management, Water Permits Division, Rural Branch, Acting Chief		Y	Y	Y	Y	
Jenny	Molloy	Office of Water, Office of Wastewater Management, Water Permits Division, Environmental Protection Specialist		P				
Hema	Subramanian	Office of Water, Office of Wastewater Management, Water Permits Division, Environmental Protection Specialist		Y	Y	Y	Y	
Joseph	Ziobro	Office of Water, Office of Wastewater Management, Water Permits Division, Physical Scientist		Y	Y	Y	Y	
Kristin	Jones	Office of Water, Office of Wastewater Management, Water Permits Division, ORISE Participant		P				
Tom	Wall	Office of Water, Office of Wetlands, Oceans, & Watersheds, Assessment & Watershed Protection Division, Director						
Mark	Pollins	Office of Enforcement & Compliance Assurance, Water Enforcement Division, Director						
Joe	Theis	Office of Enforcement & Compliance Assurance, Water Enforcement Division, Assoc. Director		N	N	N	N	
Loren	Denton	Office of Enforcement and Compliance Assurance, Water Enforcement Division, Acting Associate Director	New		N	N	N	
Kathy	Greenwald	Office of Enforcement and Compliance Assurance, Water Enforcement Division	Guest					
Carol	Galloway	Office of Enforcement & Compliance Assurance, Office of Compliance, EPA National Agriculture Center		Y	Y	Y	Y	
Ginah	Mortensen	Office of Enforcement & Compliance Assurance, Office of Compliance, EPA National Agriculture Center Director	New	P				
		Office of Policy, Smart Sectors, Agriculture	New	T	T	T	T	
Kristinn	Sharpe	Office of Policy, Smart Sectors, Agriculture	New	T	T	T	T	
Elizabeth	Corona	Office of Policy, Smart Sectors, Agriculture	New	T	T	T	T	
		EPA Regions		**15**	**12**	**10**	**10**	
Steven	Winnett	Region 1, Ag Advisor	New	Y	Y	Y	Y	

First Name	Last Name	Affiliation	New/ Guest	RSVP Mtg	RSVP Tue lunch	RSVP Tue dinner	RSVP Tour	Attended
Kristina	Heinemann	Region 2, Ag Advisor	New	Y	Y	Y	Y	
Kelly	Shenk	Region 3, Ag Advisor, AADG Manager		Y	Y	Y	Y	
Duane	Robertson	Region 4, Ag. Coordinator	New	N	N	N	N	
Gerald	Winn	Region 5, Acting Regional Ag Advisor	New	Y	Y	N	N	
Julianne	Socha	Region 5, Water Division, NPDES Programs Branch		N	N	N	N	
Cheryl	Burdett	Region 5, Water Enforcement, CAFO Program Manager						
Randy	Rush	Region 6, Ag AdvisorPolicy Advisor - Agriculture		N	N	N	N	
Jerry	Saunders	Region 6, Compliance Assurance & Enforcement Division, Water Enforcement Branch, Chief						
Denise	Hamilton	Region 6, Environmental Engineer						
William	Cooper	Region 6, Water Division	New	Y	Y	Y	Y	
Karen	Flournoy	Region 7, Ag Advisor	New	Y	Y	N	N	
Doug	Benevento	Region 8, Regional Administrator	Guest	T				
Rebecca	Perrin	Region 8, Ag Advisor		Y	Y	T	Y	
Colleen	Rathbone	Region 8, Wastewater Unit, Chief		T	T	T	T	
David	Rise	Region 8, CAFOs, Montana Oversight		T	T	T	T	
James	Hou	Region 8, Air Program	Guest	T	T	Y	Y	
Peter	Ismert	Region 8, Environmental Scientist	Guest	T	N	N	N	
		Region 8, Office of Research & Development		T				
Becky	Mitschele	Region 9, NPDES Permits & Water, Ag Coordinator		Y	Y	Y	Y	
Doug	Luehe	Region 9, Acting Chief of Staff/Ag Advisor		N	N	N	N	
Nicholas	Peak	Region 10, Ag Advisor		Y	Y	Y	Y	
Other Guests				**3**	**0**	**0**	**0**	
Andrew	Neuhart	Brown and Caldwell (Colorado Agricultural Task Force)	Guest	Y				
Mark	Sponsler	Colorado Corn (Colorado Agricultural Task Force)	Guest	Y				
Jim	Cheatham	National Park Service, Air Resources Division, Air Quality Specialist	Guest	T				

Message

From: Jackson, Ryan [jackson.ryan@epa.gov]
Sent: 10/20/2017 12:38:09 AM
To: Sands, Jeffrey [sands.jeffrey@epa.gov]
Subject: Pruitt RFS Letter to Senators_2017 10 19 FINAL (002).DOCX
Attachments: Pruitt RFS Letter to Senators_2017 10 19 FINAL (002).DOCX

Ex. 5 Deliberative Process (DP)

October 19, 2017

Senator Charles Grassley
135 Hart Senate Office Building
Washington, D.C. 20510

Senator Joni Ernst
111 Russell Senate Office Building
Washington, D.C. 20510

Senator Pat Roberts
109 Hart Senate Office Building
Washington, D.C. 20510

Senator John Thune
511 Dirksen Senate Office Building
Washington, D.C. 20510

Senator Mike Rounds
502 Hart Senate Office Building
Washington, D.C. 20510

Senator Deb Fischer
454 Russell Senate Office Building
Washington, D.C. 20510

Senator Ben Sasse
136 Russell Senate Office Building
Washington, D.C. 20510

Dear Senators Grassley, Ernst, Roberts, Thune, Rounds, Fischer, and Sasse,

My responsibility as Administrator of the Environmental Protection Agency (EPA) is to faithfully administer the laws passed by the U.S. Congress. This Agency must and will respect those laws. When it comes to the broad spectrum of environmental statutes the EPA is responsible for implementing, including the Renewable Fuel Standard (RFS), that is exactly what we have done.

The first RFS-related issue I encountered as Administrator was a pending petition requesting this Agency move the "point of obligation" from refiners and importers to blenders. After detailed analysis, numerous meetings with many stakeholders, and review of the over 18,000 comments received, the record demonstrates that granting that petition would not be appropriate. I have directed my staff to finalize this decision within 30 days.

Second, to provide stakeholders the certainty and predictability they need, EPA will meet the statutory deadline to issue a final Renewable Volume Obligation (RVO) rule by November 30, 2017. On July 21, 2017, EPA issued a proposed RVO rule that would require 19.24 billion gallons of biofuel to be blended into the nation's fuel supply. Of the 19.24 billion gallons, 15

billion gallons would be met through the blending of conventional or corn-based ethanol and the remaining 4.24 billion gallons would be met by blending a combination of advanced biofuels, at least 238 million gallons of cellulosic biofuel, and at least 2.1 billion gallons of biomass-based diesel. While the process for determining the final RVO Rule is ongoing, it would not be appropriate for the Agency to prejudge the outcome of the rulemaking process. Nevertheless, preliminary analysis suggests that all of the final RVOs should be set at amounts that are equal to or greater than the proposed amounts, including at least 2.1 billion gallons for biomass-based diesel in 2018 and 2019.

Key members of Congress have advocated for a nationwide Reid Vapor Pressure (RVP) waiver for E15, and other midlevel ethanol blends, so that E15 may be sold throughout the entire year without disruption. Since becoming Administrator, I have directed EPA to actively explore whether it possesses the legal authority to issue such a waiver. The Agency would welcome the opportunity to work with Congress on this important issue, including issuing definitive analysis on the Agency's authority to issue a nationwide RVP waiver for E15.

Finally, the Agency has been discussing a range of ideas intended to stabilize RFS compliance costs. One of these ideas presented to EPA would involve amending our regulations to modify the treatment of Renewable Identification Numbers (RINs) associated with ethanol exports. EPA has not taken any formal action to propose this idea, nor will EPA pursue regulations.

I look forward to continuing to engage in constructive and meaningful dialogue on these and other RFS-related issues. I reiterate my commitment to you and your constituents to act consistent with the text and spirit of the RFS. I take seriously my responsibility to do so in an open and transparent manner that advances the full potential of this program as envisioned by Congress, rural America, and the President of the United States.

Sincerely,

E. Scott Pruitt

Message

From: Sands, Jeffrey [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B2AA28629ADE4AFB8D5EC12A8AAABA54-SANDS, JEFF]
Sent: 11/17/2017 2:19:33 PM
To: Colleen Willard [willard@ncga.com]
CC: Subramanian, Hema [Subramanian.Hema@epa.gov]
Subject: RE: Meeting Request

Good morning Colleen,

That proposed time for Friday, December 8 at 10:00AM will work on our end. We will meet in 2415 North Building.

Cc'd is Hema Subramanian that works with me in the Ag Advisor's office. She will join us for the meeting.

Thanks and I hope you enjoy the upcoming weekend.

Best,
Jeff

From: Colleen Willard [mailto:willard@ncga.com]
Sent: Thursday, November 16, 2017 3:51 PM
To: Sands, Jeffrey <sands.jeffrey@epa.gov>
Subject: RE: Meeting Request

Hi Jeffrey,

Thank you for your email and willingness to meet with Mr. Skunes. Is 10:00 a.m. on December 8th an agreeable time for you? Mr. Skunes is interested in discussing pesticides and the renewable fuel standard.

Best,
Colleen

Colleen M. Willard
Director, Public Policy
National Corn Growers Association
20 F Street NW, Suite 600
Ex. 6 Direct
willard@ncga.com

From: Sands, Jeffrey [mailto:sands.jeffrey@epa.gov]
Sent: Thursday, November 16, 2017 9:11 AM
To: Colleen Willard <willard@ncga.com>
Subject: Meeting Request

Good morning Colleen,

Hope this note finds you well. I wanted to touch base regarding your meeting request for NCGA President Kevin Skunes.

Due to previous commitments on the Administrator's calendar for December 7&8, he will not be able to join for a meeting with Mr. Skunes. I would, however, like to offer my time to meet with NCGA at your preference for either of

those days. Please let me know of a time on the 7th&8th that works best for your team and also any issues you would like to discuss so I can work to make sure the meeting is fully accommodated from our end.

I appreciate your understanding and consideration, I look forward to hearing from you in the near future.

Best,

Jeffrey Sands
Senior Advisor to the Administrator for Agriculture Policy
1200 Pennsylvania Ave, NW
2415 WJC North
Washington, DC 20460
(202) 564-2263

The information in this email, and any attachments, is intended by the National Corn Growers Association for the use of the named individual or entity to which it is addressed and may contain information that is privileged, proprietary, copyrighted, trademarked, etc. or otherwise confidential. It is not intended for transmission to, or receipt by, any individual or entity other than the named addressee (or a person authorized to deliver it to the named addressee), except as otherwise expressly permitted in this electronic mail transmission. If you have received this communication in error, please delete it without copying or forwarding it, and notify the sender of the error by reply email.

Message

From: Sands, Jeffrey [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B2AA28629ADE4AFB8D5EC12A8AAABA54-SANDS, JEFF]
Sent: 2/16/2018 4:55:05 PM
To: Bowman, Liz [Bowman.Liz@epa.gov]
CC: Abboud, Michael [abboud.michael@epa.gov]
Subject: Fwd: Story on EPA ethics waiver

Hi Liz,

Wanted to pass this note along from ProPublica and see how you would best like handle commenting. I have been recused from working on any specific matters with either of these entities/organizations (ARA/Syngenta) per ethics guidelines but wanted to make you were aware and wanted to seek your input on how to best respond.

Please let me know what further details you need or what else you need from me to best respond.

Thanks,
Jeff

Sent from my iPhone

Begin forwarded message:

> **From:** Claire Perlman <Claire.Perlman@propublica.org>
> **Date:** February 16, 2018 at 11:28:58 AM EST
> **To:** "sands.jeffrey@epa.gov" <sands.jeffrey@epa.gov>
> **Subject: Story on EPA ethics waiver**
>
> Hi Jeffrey,
>
> I'm with ProPublica, and I'm writing a post about your ethics pledge waiver with the EPA, specifically the possible conflicts of interest that remain with your previous lobbying work at Syngenta and Agricultural Retailers Association and your current role at the EPA. Do you have any comment on the steps you're taking to recuse yourself from any areas in which you have a conflict of interest? For example, are you working on any issues involving atrazine?
>
> Feel free to email me or call me at the number below.
>
> Thanks,
>
> Claire Perlman
> ProPublica
> www.propublica.org
> Ex. 6

Message

From: Sands, Jeffrey [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B2AA28629ADE4AFB8D5EC12A8AAABA54-SANDS, JEFF]
Sent: 12/12/2017 3:39:18 PM
To: Subramanian, Hema [Subramanian.Hema@epa.gov]
Subject: Fwd: Ag Biogenic CO2
Attachments: image001.png; ATT00001.htm; image002.gif; ATT00002.htm; Biogenic CO2 Coalition - 1-pg Overview (3-13-17).pdf; ATT00003.htm

FYI....

Sent from my iPhone

Begin forwarded message:

From: Kyle Harris <kharris@corn.org>
Date: December 12, 2017 at 8:37:08 AM MST
To: "sands.jeffrey@epa.gov" <sands.jeffrey@epa.gov>
Subject: Ag Biogenic CO2

My name is Kyle Harris and I manage the Environmental Affairs for the Corn Refiners Association, who chairs the Biogenic CO2 Coalition (please find our 1-pager attached).

I would appreciate the opportunity to come and brief you on our issue, which involves air emissions from the processing and/or combustion of short-cycle herbaceous crops. The Ag sector is poised to invest billions of dollars throughout the United States to expand the bioeconomy, which can provide 21st century solutions to economic growth, domestic energy security, and environmental benefits in the form of bioenergy, biofuels, and bioproducts made from corn, oilseeds, crop residues, farm wastes and other agricultural feedstocks.

We have been working on this issue closely with OAR, and Alex Dominguez has kindly given me your contact information.

Please advise any times that may work for you and your team where we could sit down and further discuss.

Thanks in advance,

Kyle

Kyle A. Harris, Esq.
Manager, Environmental Affairs/ Workplace Safety
Corn Refiners Association
www.corn.org
1701 Pennsylvania Ave NW
Suite 950, Washington, DC 20006
Office: Ex. 6
Cell: Ex. 6

BIOGENIC CO_2 COALITION

Members

American Bakers Association

American Farm Bureau Federation

Corn Refiners Association

Enginuity Worldwide

National Corn Growers Association

National Cotton Council of America

National Cottonseed Products Association

National Oilseed Processors Association

North American Millers' Association

The Biogenic CO_2 Coalition supports science-based recognition that agricultural biogenic CO_2 emissions are not harmful greenhouse gases and opposes EPA's overreach in regulating sustainability on farms.

Agriculture is key to the 21st century bioeconomy that includes feeding America and the expansion of bioproducts such as bioplastics, composites, and intermediates made from corn, oilseeds and other agricultural feedstocks. According to the federal government, the bioeconomy in 2013 was valued at $369 billion, provided 4 million American jobs, and was the leading source of domestic renewable energy. The bioeconomy is poised to expand exponentially with tremendous potential for economic development and job creation.

When farmers grow crops, they store carbon (CO_2) from the atmosphere, and when agricultural feedstocks are used for food, fuel and fiber, CO_2 simply returns to the atmosphere in a natural biogenic cycle.

Because of the benefits of agriculture as a renewable and sustainable resource, "biogenic" CO_2 emissions from agricultural feedstocks are universally accepted as carbon neutral by policymakers and scientists, yet:

- EPA is ignoring science and treating biogenic CO_2 emissions from farm products a "harmful pollutant" the same as fossil fuels.
- Practically speaking, EPA is putting a pollution tax on farm products, which imposes $$$ millions of unnecessary costs on users of farm products (think bakeries, brewers and grain processors) and energy generators (for example, corn stover used for electricity).
- If farmers want to avoid EPA's pollution tax, EPA says it can dictate what "sustainable" farm practices can be used to produce food products or energy feedstocks, which will require tracking compliance of every bushel of corn, wheat, soy or cottonseed from its source.

Congress should stop EPA from ignoring science and blocking American agriculture and bioeconomy markets. Prompt relief is crucial, as development of the bioeconomy will not wait – if the U.S. does not move forward, other countries will dominate these markets.

Our Request:
Biogenic CO_2 emissions from the use or processing of agricultural crops should be recognized as *de minimis* or zero under the Clean Air Act; and

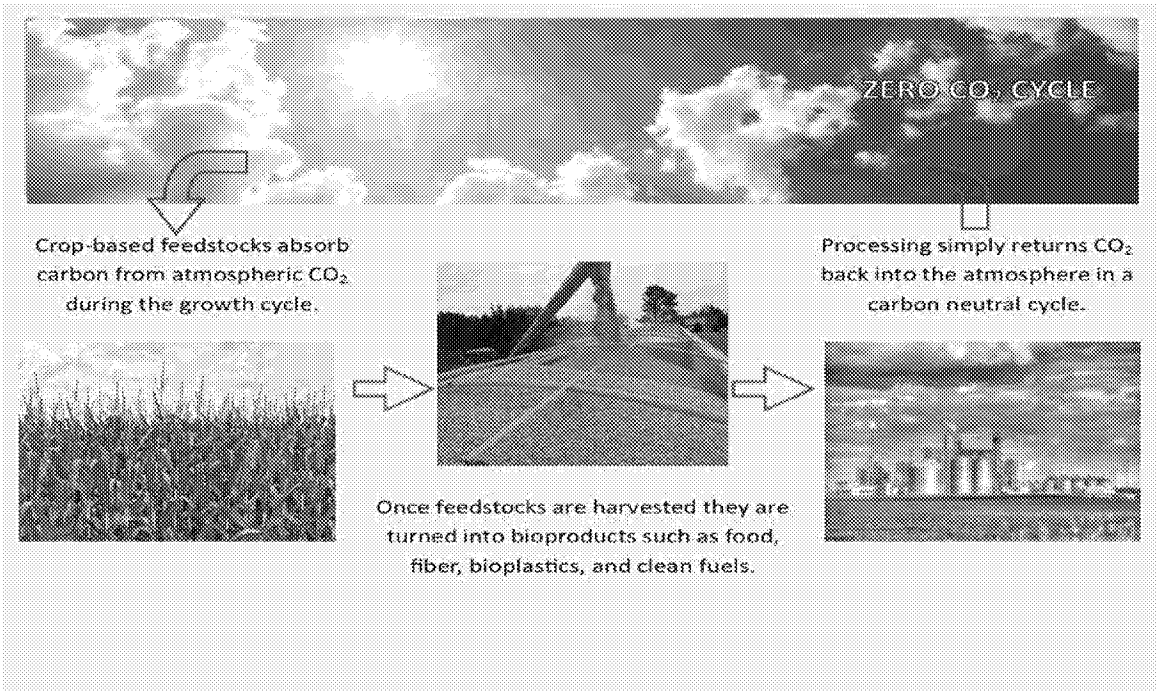
EPA should retract any attempt to regulate "sustainable" farming practices as a condition to feedstock eligibility under its Clean Power Plan (CPP) or Clean Air Act.

About the Biogenic CO_2 Coalition:

The Biogenic CO_2 Coalition, through its member national trade groups, represents a broad swath of agriculture and related sector constituents in advocating for sensible policies recognizing the carbon benefits of agricultural production and processing.

www.BiogenicCO2.org

Carbon Lifecycle of Agricultural Crops



American Bakers Association
www.americanbakers.org

AMERICAN FARM BUREAU FEDERATION®

CORN REFINERS ASSOCIATION

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NATIONAL CORN GROWERS ASSOCIATION

National Cotton Council OF AMERICA

NCPA
National Cottonseed Products Association

NOPA
NATIONAL OILSEED PROCESSORS ASSOCIATION

North American Millers' Association
NAMA

www.BiogenicCO2.org

CORN REFINERS ASSOCIATION

Message

From: Sands, Jeffrey [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B2AA28629ADE4AFB8D5EC12A8AAABA54-SANDS, JEFF]
Sent: 2/15/2018 8:22:39 PM
To: Hillary Hutchins [Hillaryh@nationalpotatocouncil.org]
CC: Subramanian, Hema [Subramanian.Hema@epa.gov]
Subject: RE: NPC Potato D.C. Fly-In speaking confirmation
Attachments: Jeff Sands BIO.DOCX

Hillary,

Attached please find a BIO. I unfortunately do not have an official headshot to share.

I will plan on preparing a short PPT presentation for the group which I will share with you next week.

Thank you.

Best,
Jeff

From: Hillary Hutchins [mailto:Hillaryh@nationalpotatocouncil.org]
Sent: Wednesday, February 14, 2018 5:36 PM
To: Sands, Jeffrey <sands.jeffrey@epa.gov>
Subject: RE: NPC Potato D.C. Fly-In speaking confirmation

Hi Jeff,

I wanted to follow up to the email below to see if you could send me your bio and headshot for us use in our meeting materials for the Potato D.C. Fly-In. Please also let me know if you plan to have a Power Point presentation for your session.

Thanks,

Hillary Hutchins
National Potato Council
1300 L Street, NW
Suite 910
Washington, DC 20005
ph Ex. 6
Tw: @ThisSpudsForYou

From: Hillary Hutchins
Sent: Friday, February 9, 2018 12:51 PM
To: 'sands.jeffrey@epa.gov' <sands.jeffrey@epa.gov>
Subject: NPC Potato D.C. Fly-In speaking confirmation

Hi Jeff,

I am emailing to confirm that you will be speaking at the National Potato Council's Fly-In on Monday, February 26 at 4:15pm at the Capital Hilton. The session will be held in the South American room. Please let me know what AV requirements you have for this session. Also, could you send me a bio and headshot by Wednesday, February 14?

Thank you,

Hillary Hutchins
National Potato Council
1300 L Street, NW
Suite 910
Washington, DC 20005
ph: Ex. 6
Tw: @ThisSpudsForYou

Jeff Sands is the Senior Advisor to the Administrator for Agriculture at the Environmental Protection Agency. Jeff comes to EPA most recently from Syngenta, where he served as Manager of Federal Government and Industry Relations. Before working at Syngenta, Sands was director of public policy for the Agricultural Retailers Association from 2012 to 2015. Jeff also has Capitol Hill experience, having helped handle agricultural issues as an aide to Rep. Tom Marino (R-Pa.).

Sands has a master's degree in public administration as well as a bachelor's degree in organizational communication from Valdosta State University. He also has a degree in environmental horticulture from Abraham Baldwin Agricultural College.

Message

From: Sands, Jeffrey [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B2AA28629ADE4AFB8D5EC12A8AAABA54-SANDS, JEFF]
Sent: 10/31/2017 12:13:55 AM
To: Fugh, Justina [Fugh.Justina@epa.gov]
CC: Griffo, Shannon [Griffo.Shannon@epa.gov]; Ross, Margaret [Ross.Margaret@epa.gov]
Subject: Re: confirmation of our conversation on Friday, October 27

Justina,

Thank you very much for the time on Friday and for this very informative email recapping our discussion regarding my obligations.

I will look forward to hearing from Margaret and Shannon on the other items and will work to complete all assigned tasks as quickly as possible.

Have a great evening.

Best,
Jeff Sands

On Oct 30, 2017, at 6:04 PM, Fugh, Justina <Fugh.Justina@epa.gov> wrote:

> Hi there,
> Thanks for stopping by on Friday so that we could conduct your new employee ethics briefing. It was an enjoyable discussion on a Friday! This note confirms our conversation. I am copying Shannon Griffo, ethics attorney, as she will be drafting your recusal statement, as well as Margaret Ross, ethics officer, because she needs to obtain an INTEGRITY account for you and assign you a new entrant report. That will happen tomorrow, I expect, as Margaret is out of the office today.
>
> YOUR APPOINTMENT
> You started at EPA effective October 15, 2017, in an Administratively Determined (AD) position, which is not affected by Executive Order 13,770 so you did not have to sign the Trump Ethics Pledge. But we learned that, effective October 29, 2017, you would be converted to a Schedule C appointment, which is subject to the executive order and the pledge. To that end, you signed a pledge effective October 30, 2017, and I briefed you about the pledge requirements in our discussion.
>
> FINANCIAL DISCLOSURE REPORT
> Sometime later this week, we will assign a new entrant report for you in INTEGRITY, the electronic filing database. Upon assignment, you will have 30 days to complete the report. If you need more time, you must ask Margaret or me prior to the expiration of your deadline. You'll get more information later, once we assign the report to you.

YOUR ETHICS OBLIGATIONS (first two weeks)
We discussed the fact that, for the first two weeks of your EPA employment, you were an AD appointee, so not subject to the Trump ethics pledge. You were, though, subject to the impartiality provisions of the Standards of Ethical Conduct for Employees of the Executive Branch, found at 5 CFR Part 2635, Subpart E. Those provisions include a "cooling off" period with your immediate previous employer, Syngenta, as well as any organization in which you served in a fiduciary role, which will include the Agriculture Retailers Association (ARA) and the National Agriculture Aviation Association (NAAA), since you were on their boards of directors. For one year under the impartiality standards, you can't work on any specific party matter that involves any of those three entities. During your first two weeks at EPA, you indicated that you did not in fact work on any such specific party matter (e.g., a license, permit, enforcement action) with Syngenta, ARA or NAAA. You acknowledged that you did provide general information to ARA for an invitation they issued to the Administrator, conveying only that he cannot attend. You did not otherwise interact with them, and I indicated that this logistical interaction did not rise to any substantial participation. Therefore, I believe that you have met your obligations under the impartiality standards for your former employer and former fiduciary roles.

YOUR ETHICS OBLIGATIONS UNDER THE PLEDGE
Now that you are a political appointee, you are subject to Executive Order 13,770 and the Trump Ethics Pledge. We discussed the fact that the White House Counsel signed a waiver for you from paragraph 6 to allow you, as a former federally registered lobbyist, to participate personally and substantially in those specific issue areas in which you lobbied. I mentioned that the Office of Government Ethics seems to be confused about this waiver, so EPA Ethics is reaching out to both OGE and the White House for clarification. My advice to you is to proceed with your duties, including working on agriculture issues. EPA has a signed waiver from the White House in hand that permits you to do so.

You are still, though, subject to paragraph 7 of the pledge, which restricts you from participating in any particular matter involving specific parties in which Syngenta, ARA or NAAA is or represents a party. We talked about the implications of this prohibition in some detail. I explained that you cannot, as part of your official duty, interact with Syngenta, ARA or NAAA for two years by, for example, accepting an invitation to speak to their board of directors or to respond to a call or email from their representative. In fact, you cannot attend a meeting at which a representative from any of those entities is present, unless the subject matter of the meeting is a particular matter of general applicability (meaning that it affects an entire sector or industry), and the meeting itself is open to all interested parties (by which we mean at least 4 others). So you could attend a CropLife conference, even though we know that Syngenta and ARA representatives will be present. But do not participate in a sidebar conversation with just Syngenta, ARA or NAAA unless you first consult with EPA Ethics for advice.

You may, as we discussed, still have personal friends and contacts. For example, you can go to dinner with former Syngenta colleagues, or go to a ball game, but only so long as you are doing so based on a personal relationship, and they don't use the opportunity to try to get you engage in your official EPA business.

RECUSALS
You indicated that you do not own any stocks or bonds, so we do not anticipate any likely financial conflicts of interest. Shannon will include Syngenta, Agriculture Retailers Association, and National Agriculture Aviation Association on your pledge recusals. She'll also include the

American Veterinary Medicine Association, where your spouse is a salaried employee and also a federally registered lobbyist.

Whew. I think that covers what we discussed. Welcome to EPA!
Justina

Justina Fugh | Senior Counsel for Ethics | Office of General Counsel | US EPA | Mail Code 2311A | Room 4308 North, William Jefferson Clinton Federal Building | Washington, DC 20460 (for ground deliveries, use 20004 for the zip code) | phone 202-564-1786 | fax 202-564-1772

Message

From: Sands, Jeffrey [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B2AA28629ADE4AFB8D5EC12A8AAABA54-SANDS, JEFF]
Sent: 1/8/2018 3:26:47 PM
To: Bowman, Liz [Bowman.Liz@epa.gov]
Subject: FW: Report to the President from the Task Force on Agriculture and Rural Prosperity
Attachments: Rural Prosperity Task Force Members.pdf; Report to the President of the United States from the Task Force on Agriculture and Rural Prosperity.pdf

Hey Liz,

This just came in from USDA. They said at this point they were reaching out to key stakeholders but not to the press as of yet to get in front of the White House.

Blake did not have a full rundown of the media strategy. As you might imagine, I believe Michawn is running all of that down. I will keep you posted if I hear anything more.

From: Rollins, Blake - OSEC, Washington, DC [mailto:Blake.Rollins@osec.usda.gov]
Sent: Monday, January 8, 2018 9:08 AM
Cc: Adcock, Rebeckah - OSEC, Washington, DC <Rebeckah.Adcock@osec.usda.gov>; Bridgforth, Turner - OSEC, Washington, DC <Turner.Bridgforth@osec.usda.gov>
Subject: Report to the President from the Task Force on Agriculture and Rural Prosperity

Good morning,

In advance of the President's address later today at the American Farm Bureau Federation Convention, I wanted to send you a PDF of the full report to the President from the Task Force on Agriculture & Rural Prosperity. Additionally, I've attached a letter from Sec. Perdue thanking all of the members of the Ag & Rural Prosperity Task Force for their service.

Please let us know if you have any questions.

Link to the report will be available here: https://www.usda.gov/ruralprosperity

Thank you,
Blake

Blake Rollins
Director, Office of External and Intergovernmental Affairs

United States Department of Agriculture
Office: (202) 205-4380

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USDA

United States Department of Agriculture

Report to the President of the United States from the Task Force on Agriculture and Rural Prosperity

Secretary Sonny Perdue, Chair

Dear Mr. President,

On April 25, 2017, you established the Interagency Task Force on Agriculture and Rural Prosperity through Executive Order 13790 and appointed me as its Chair. The purpose and function of this Task Force have been to identify legislative, regulatory, and policy changes to promote agriculture, economic development, job growth, infrastructure improvements, technological innovation, energy security, and quality of life in rural America. This report fulfills your request that these recommended changes be identified and presented to you, in coordination with the other members of the Task Force.

In response to your call to action to promote agriculture and rural prosperity in America, the Task Force envisioned a rural America with world-class resources, tools, and support to build robust, sustainable communities for generations to come. Members of the Task Force met, along with staff involved in separate working groups, to set priorities and a framework. Along the way, we held several "listening sessions" across the country, so that we heard directly from the communities that comprise rural America.

With the voice of rural America leading the way, and in close collaboration with local, state, and tribal leaders, more than 21 federal agencies, offices, and executive departments identified over 100 actions the federal government should consider undertaking to achieve this vision. These recommendations were organized around five key indicators of rural prosperity: e-Connectivity, Quality of Life, Rural Workforce, Technological Innovation, and Economic Development.

e-Connectivity for Rural America: In today's information-driven global economy, e-connectivity is not simply an amenity - it has become essential. E-connectivity, or electronic connectivity, is more than just connecting households, schools, and healthcare centers to each other as well as the rest of the world through high-speed internet. It is also a tool that enables increased productivity for farms, factories, forests, mining, and small businesses. E-connectivity is fundamental for economic development, innovation, advancements in technology, workforce readiness, and an improved quality of life. Reliable and affordable high-speed internet connectivity will transform rural America as a key catalyst for prosperity.

Improving Quality of Life: Ensuring rural Americans can achieve a high quality of life is the foundation of prosperity. Quality of life is a measure of human well-being that can be identified though economic and social indicators. Modern utilities, affordable housing, efficient transportation and reliable employment are economic indicators that must be integrated with social indicators like access to medical services, public safety, education and community resilience to empower rural communities to thrive. Focusing and delivering key federal reforms will enable rural Americans to flourish and prosper in 21st Century communities.

Supporting a Rural Workforce: To grow and prosper, every rural community needs job opportunities for its residents, and employers need qualified individuals to fill those needs. This requires identifying employment needs, attracting available workers from urban and rural centers alike, and providing the workforce with training and education to best fill the available needs. There are many opportunities to partner with local businesses and organizations to identify gaps, to work with all levels of educational institutions to provide career training and development, to fine-tune existing training programs, and to grow apprenticeship opportunities to develop the required workforce. Providing rural communities, organizations, and businesses a skilled workforce with an environment where people can thrive will grow prosperous communities.

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Harnessing Technological Innovation: By 2050, the U.S. population is projected to increase to almost 400 million people, and rising incomes worldwide will translate into a historic global growth in food demand. To feed a hungry world, we will need to harness innovation to increase output across American farmlands. In addition to increased crop yields, technological innovation can improve crop quality, nutritional value, and food safety. Innovations in manufacturing, mining, and other non-agricultural industries can enhance worker efficiency and safety. At the core of these developments that will further grow the rural economy is the expansion of STEM education, research, regulatory modernization, and infrastructure. Leveraging these innovations in an increasingly data-driven economy will also require further development of rural data management capabilities.

Economic Development: Infusing rural areas with stronger businesses and agricultural economies empowers America. Expanding funding options to increase the productivity of farmers and ranchers will lead to the enhanced viability and competitiveness of rural America. By promoting innovative farm technologies, energy security, recreation, agritourism and sustainable forest management, communities will be empowered to leverage the bounties of rural America. Investing in rural transportation infrastructure is needed for carrying more "Made in America" products to markets at home and abroad, and boosting our country's global competitiveness. Reducing regulatory burdens and attracting private capital will support our ultimate mission of empowering Rural America to feed the world.

While other sectors of the American economy have largely recovered from the Great Recession, rural America has lagged in almost every indicator. Your charge to identify and recommend a pathway back to prosperity for these fellow citizens is one we have taken seriously. The creation of the Task Force and your directives contained in an Executive Order were, after all, not an Executive Suggestion. We are proud to issue this final report on our endeavors.

Sincerely,

Sonny Perdue
United States Secretary of Agriculture
October 21, 2017

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I. The Opportunities of Rural America

I. The Opportunities of Rural America

Rural America includes 72% of the nation's land and 46 million people[1]. Rural areas encompass regions that focus on agricultural production as well as places where work is more often found in industries such as manufacturing, mining, and forestry. They include locales that are prosperous and rapidly-growing, locales that are chronically depressed, and everything in between. Rural America is home to many different racial and ethnic demographics and a wide array of economic activities. These residents live in a variety of settings, from counties bordering suburbs to remote and isolated areas.

Rural America has a diverse store of assets to draw upon: abundant land and natural resources; scenic and cultural amenities that attract new residents and visitors alike; a strong entrepreneurial spirit; and people of all ages and occupations. People remain in or move to rural areas for many reasons: to seek an active lifestyle, to take advantage of lower costs of living, to encounter less congestion, to enjoy a slower pace of life, and to more closely connect to nature and recreational opportunities. Many people return to their rural roots to raise children and reconnect with family and friends, filling workforce gaps and bringing needed leadership and professional skills.

American prosperity and well-being are intrinsically tied to rural America's ability to thrive in the new global economy; to build and attract an educated workforce and expand its population base; and to use its diverse and abundant natural resources to provide food, fiber, forest products, energy, and recreation.

From the forests of Maine to the deserts of Arizona, from the Mississippi Delta to the Upper Great Lakes, rural communities face diverse economic challenges that differ from those found in urban areas. Less dense and relatively remote populations are affected by difficulties in accessing transportation, telecommunications, healthcare, housing, economic development resources, and job opportunities. In many regions, such as the Midwest and Great Plains, these challenges are associated with high rates of young adults leaving the region, resulting in fewer workers and an aging population. Indeed, aging itself poses challenges, such as reducing workforce capacity and increasing the demand for healthcare, housing, and other services geared to the needs of an older population.

Alongside these challenges, rural America possesses inherent strengths which can be used for enhancing the prosperity of its people and its contribution to the economic well-being of the nation. Today's rural areas are more economically diverse than in the past, reflecting the national trend to greater reliance on service jobs. While traditional rural sectors such as agriculture, mining, and manufacturing employ a smaller percentage of the population than before, they continue to anchor the economies of more than half our counties across the nation. These sectors, disproportionately located in rural areas, exhibit higher-than-average productivity growth.

1 Unless otherwise noted, throughout this report, rural is defined using nonmetropolitan (nonmetro counties). The terms "rural" and "nonmetro" are used interchangeably. Both terms refer to counties outside of Metropolitan Statistical Areas, defined by the Office of Management and Budget (OMB), which include cities of 50,000 or more and counties connected to these cities through commuting. Studies designed to track and explain economic and social changes most often choose the metro and nonmetro classification because it allows the use of widely available county-level data. However, researchers and policy officials often employ multiple definitions to distinguish rural from urban areas.

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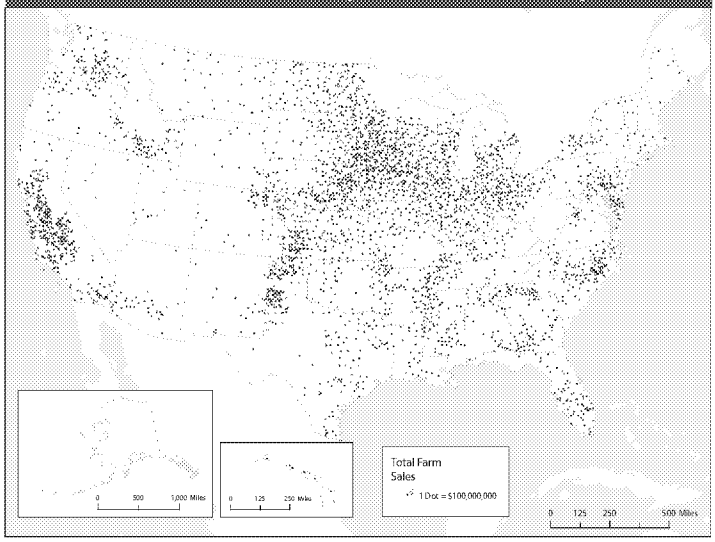
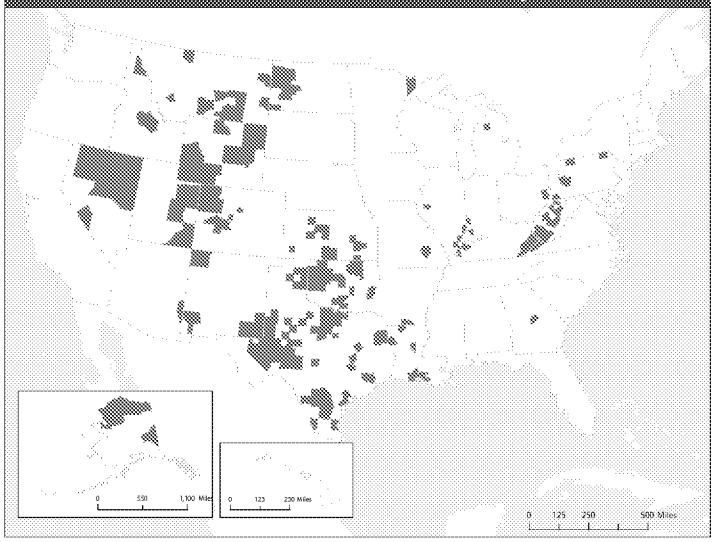
The dominance of traditional rural sectors varies across the country and reflects regions' most productive resources. For example, farm sales (gross sales of all farms in the United States that produce more than $1000 per year) are concentrated in California, the Upper Midwest, the Great Plains, and parts of the Eastern Seaboard. Mining-dependent counties are primarily in the Mountain West, Great Plains, and parts of Appalachia. Forested lands are predominant in mountainous areas of the east and west. Manufacturing tends to be more concentrated in the eastern half of the United States, particularly the Upper Midwest and the South.

FARMING AREAS (2012 FARM SALES)



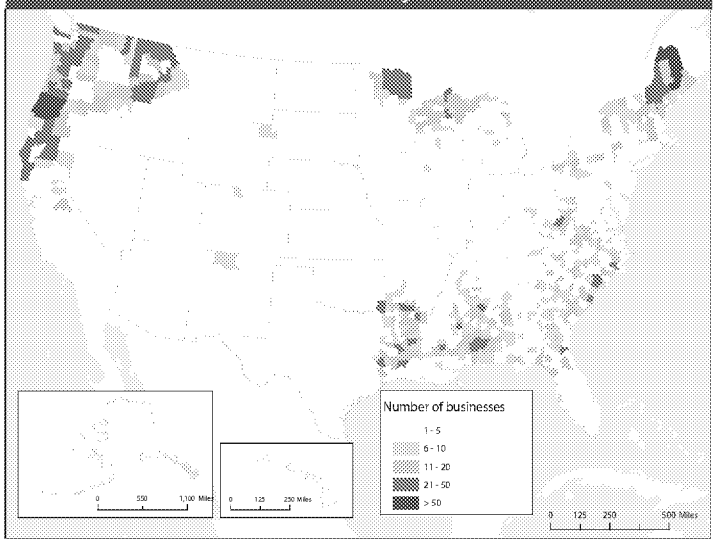
Source: 2012 Census of Agriculture

MINING DEPENDENT COUNTIES, 2015



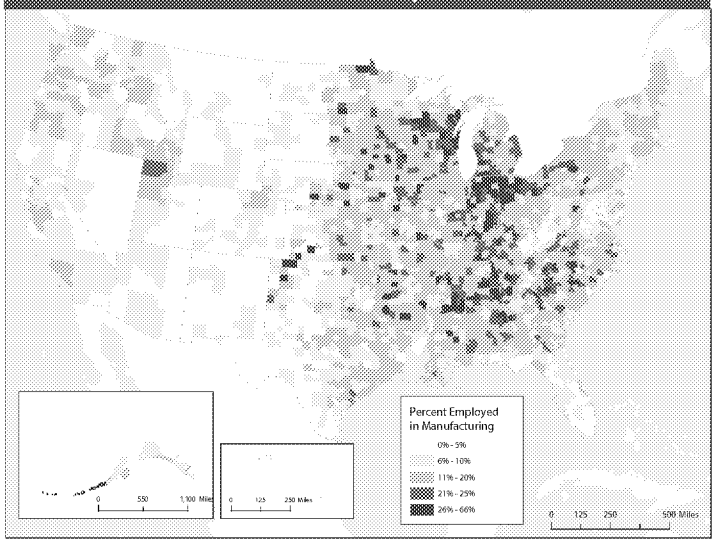
Source: USDA Economic Research Service Typology Codes, using data from the Bureau of Economic Analysis, 2015

FORESTRY-RELATED BUSINESSES, 2014



Source: Census Bureau, County Business Patterns, 2014

SHARE OF EMPLOYMENT IN MANUFACTURING, 2011-15



Source: Census Bureau, American Community Survey, 2011-15

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Overcoming the challenges and realizing the opportunities for prosperity in rural America requires action on multiple fronts, including promoting economic development, advancing innovation and technology, ensuring a well-trained and productive workforce, and improving the quality of life in rural communities. Success depends, in large part, on promoting two key drivers of long-term growth and prosperity: broad-based productivity growth in the rural economy and connectivity of rural people to each other, to urban areas, and to the rest of the world.

Credit: Getty Images

Achieving increased productivity usually requires innovation and technology, as well as access to capital, infrastructure, and an adequately trained workforce for businesses. In turn, the rural workforce depends on quality of life in rural areas, including the assurance that rural schools and health services are of sufficient quality, either to train productive workers from the local population or to attract employees and their families from other places. Drawing and retaining people and businesses in rural areas promotes economic development, because a large portion of employment growth in rural economies - in retail, healthcare, law enforcement and other public-sector jobs - depends on growth in the rural population and local consumer demand. Hence, improving quality of life in rural areas is not only an important goal, but is also important to ensuring a productive rural workforce and maximizing rural prosperity.

In our increasingly digital economy, distance between rural economic inputs and markets is less of a barrier to business growth. Expanding availability of high-speed internet or e-connectivity allows rural areas to take advantage of this new reality in addition to broader domestic and international markets. Unfortunately, rural areas remain less connected to reliable high-speed internet today than metropolitan areas and have lower usage rates compared with urban areas. As a result, a wide array of digital services and activities - from e-commerce to telehealth to digital learning - are becoming an increasingly important feature for a prosperous rural life.

Unleashing the potential and ingenuity of rural communities is an integral part of making America great again. This report should serve as a roadmap to guide the federal government towards empowering rural America to take advantage of the many opportunities that can and do exist. Facilitating and supporting access to world-class resources and tools that build robust, sustainable communities for generations to come is required for success.

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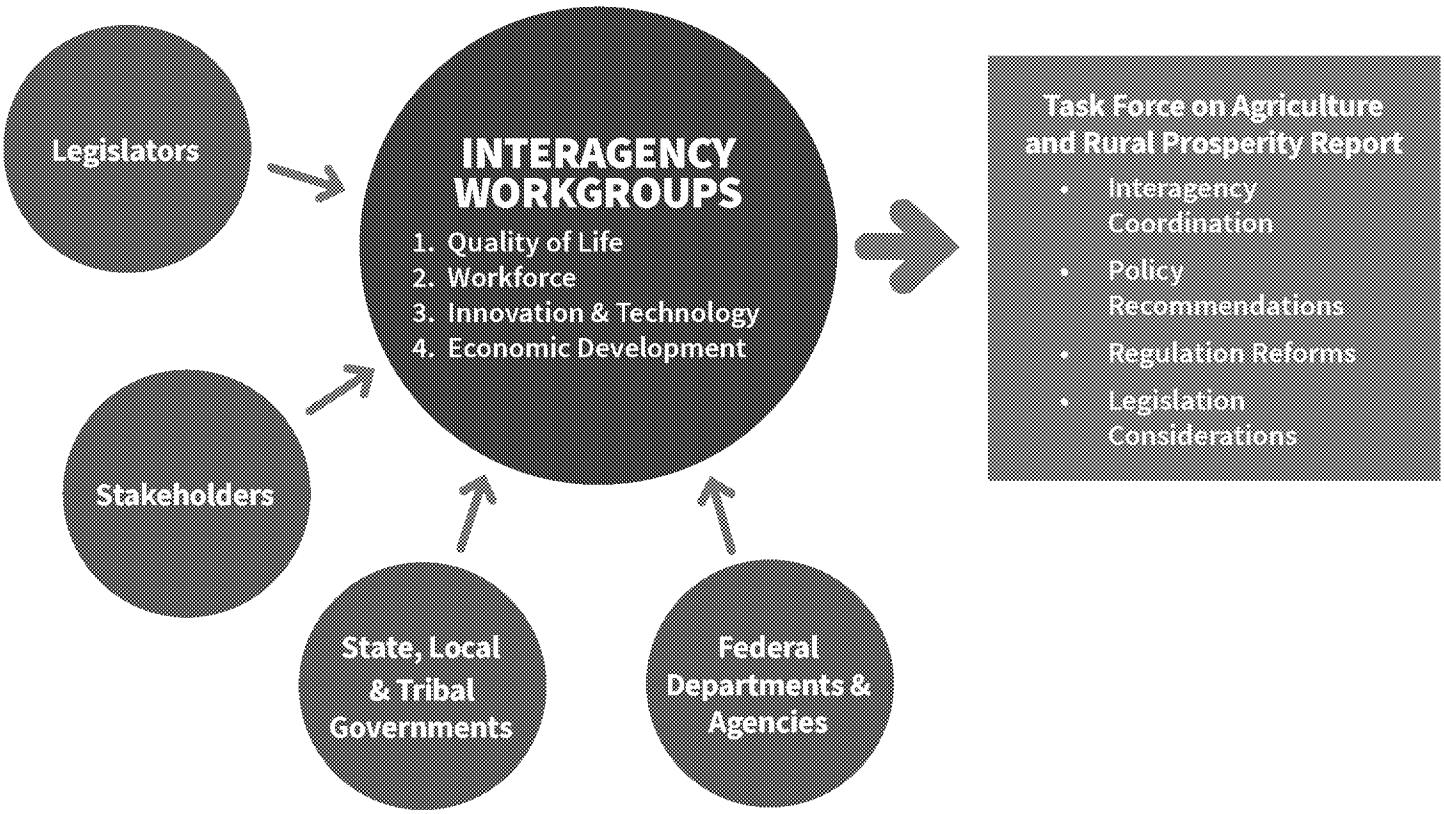
II. Task Force Approach

II. Task Force Approach

The President's Executive Order directed the Task Force to identify key legislative, regulatory, and policy changes to achieve rural prosperity in seven areas: rural American agriculture, economic development, job growth, infrastructure improvements, technological innovation, energy security, and quality of life. To improve customer service and maximize efficiency across the federal government, interagency coordination was also identified as a key place for change.

This report represents a summary of the recommendations gathered by the Task Force through direct engagement with stakeholders, consultations with state, local, and tribal governments, as well as federal agencies with equity in rural America.



The Voice of Rural America

The Task Force found significant guidance from rural stakeholders in the development of this report. Beginning at the inaugural public session of the Task Force held on June 16, 2017 at the Department of Agriculture, and continuing through the comments submitted on a regular basis through an online portal, we heard from the people of America. Additionally, Task Force Chair Secretary Perdue, along with senior federal leadership hosted roundtables in Wisconsin, Georgia, New Hampshire, West Virginia, and North Carolina to hear from partners and understand the concerns of rural citizens.

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Our Federal Family

To capitalize on the programmatic specialties spanning the federal government, the Task Force divided into four workgroups comprised of representatives of federal departments, specific agencies, and subject matter experts. Each workgroup focused on a specific topic, including: Quality of Life, Rural Workforce, Innovation and Technology, and Economic Development. Together, they designed a roadmap of goals and strategies to make our country great again through the prosperity of rural America. Collectively, the workgroups identified over 100 recommended potential actions. To inform these recommendations, a robust and in-depth analysis from the Department of Agriculture's Economic Research Service was developed to identify the opportunities and challenges for agriculture and rural prosperity in America.

Task Force members include:

- The Secretary of the Treasury
- The Secretary of Defense
- The Attorney General
- The Secretary of the Interior
- The Secretary of Commerce
- The Secretary of Labor
- The Secretary of Health and Human Services
- The Secretary of Transportation
- The Secretary of Energy
- The Secretary of Education
- The Administrator of the Environmental Protection Agency
- The Chairman of the Federal Communications Commission
- The Director of the Office of Management and Budget
- The Director of the Office of Science and Technology Policy
- The Director of the Office of National Drug Control Policy
- The Chairman of the Council of Economic Advisers
- The Assistant to the President for Domestic Policy
- The Assistant to the President for Economic Policy
- The Administrator of the Small Business Administration
- The United States Trade Representative
- The Director of the National Science Foundation
- The heads of such other executive departments, agencies, and offices as the President or the Secretary of Agriculture may, from time to time, designate

Putting the Recommended Actions to Work

To ensure that the findings of this report have a meaningful impact on rural America, the Task Force urges that work and oversight continue to compel action. Leadership is still required to accomplish many of its goals, including to implement the initial recommendations for which action plans have begun; to move other ideas from conception into action plans; to expand stakeholder participation; to set regional task force solutions; to increase the activities of state, local, and tribal partners; and to advance other suggestions federal partners may make in the future.

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The Task Force proposes the following structure for the continuation and implementation of ongoing federal interagency action aimed at improving rural prosperity:

1. **Establish a Federal *Commission on Agriculture and Rural Prosperity*** – The Commission should be structured similar to the current Task Force. This group of Cabinet and federal executive leaders should meet no less than bi-annually to ensure appropriate interagency coordination and execution of the Task Force actions and future agreed-to activities. Further, the Commission should prepare regular reports to the President, not less than once a year, to demonstrate progress on Commission actions.

2. **Establish a Stakeholder Advisory Council to Advise the Commission** – The Commission should prioritize on-going, robust stakeholder participation from the private sector and non-federal governmental (State, Local & Tribal) interests. The role of the Advisory Council would be to help identify, develop and implement actions that lead to prosperity in rural America. The Advisory Council should meet on a regular basis with the Commission's Managing Director to provide input on recommendations, action plans and opportunities for federal, state, tribal, local and public private partnerships.

3. **Establish a Managing Director to Oversee the Commission and Advisory Council** – A Managing Director should be appointed and charged with establishing strategic and communications plans for implementing the work of the Commission, including development and execution of action plans. The Managing Director should also be tasked with organizing and managing the meetings and work product of the Commission and Stakeholder Advisory Council. Additionally, the office would develop, execute and expand inter-agency agreements, MOUs and create new agreements as necessary, as well as develop and manage implementation metrics and measures to guide the interagency actions and the success of the Commission.

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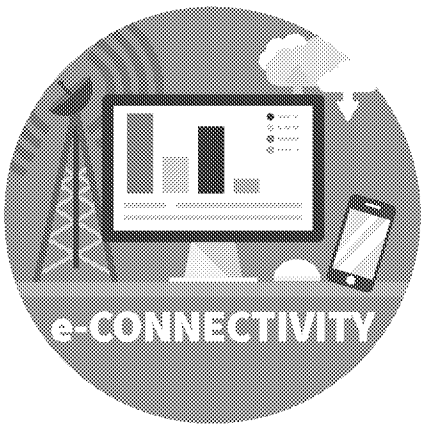
III. Answering the Call to Action for Rural America

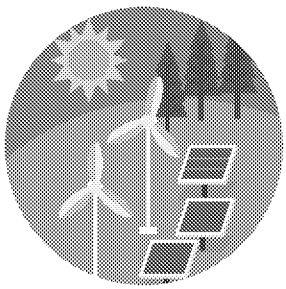
RURAL PROSPERITY

Rural America can make our country great again.



ECONOMIC DEVELOPMENT

- Access to Capital
- Tax Reform
- Natural Resources
- Regulatory Reform
- Global Market
- Infrastructure



INNOVATION & TECHNOLOGY

- Biotechnology
- Sound Science
- Productivity
- Research
- Development

WORKFORCE

- Available
- Skilled
- Trained
- Educated
- Reliable

QUALITY OF LIFE

- Educational Opportunities
- Health Services
- Rural Housing
- Community Resiliency
- Infrastructure

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Photo credit: Getty Images

Call to Action #1: Achieving e-Connectivity for Rural America

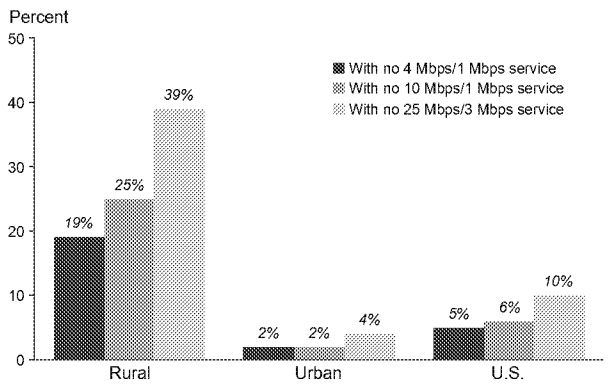
In today's information-driven global economy, e-connectivity is not simply an amenity - it has become essential. E-connectivity, or electronic connectivity, is more than just connecting households, schools, and healthcare centers to each other as well as the rest of the world through high-speed internet. It is also a tool that enables increased productivity for farms, factories, forests, mining, and small businesses. E-connectivity is fundamental for economic development, innovation, advancements in technology, workforce readiness, and an improved quality of life. Reliable and affordable high-speed internet e-connectivity will transform rural America as a key catalyst for prosperity.

The expansion of high-speed, high-capacity internet to connect rural America to the "digital superhighway" of global commerce is a key infrastructure priority. E-connectivity for rural America is essential for ensuring America's economic competitiveness and enabling all Americans to be plugged in to a world of opportunity.

Over the past decade, high-speed internet has been transformational for the U.S. economy. It has facilitated commerce and generated sustainable economic activity. A recent study indicated that the rural broadband industry supported nearly 70,000 jobs and over $100 billion in commerce in 2015 (Kuttner, 2016). In addition, the U.S. Census Bureau estimates that U.S. retail e-commerce sales amounted to $111.5 billion in the second quarter of 2017, an increase of nearly 5% from the prior quarter and 16.2% year-over-year growth.

Unfortunately, too many Americans do not experience the benefits of robust internet service. As of 2014, 39 percent of the rural population lacked access to broadband at speeds necessary for advanced telecommunications and data transfer capability (see chart for comparison with urban and national populations). This e-connectivity gap not only prevents rural Americans from participating in the global marketplace but also limits urban Americans

Americans lacking access to fixed terrestrial broadband service at various speeds



Source: Federal Communications Commission, *2016 Broadband Progress Report* (statistics as of December 2014).

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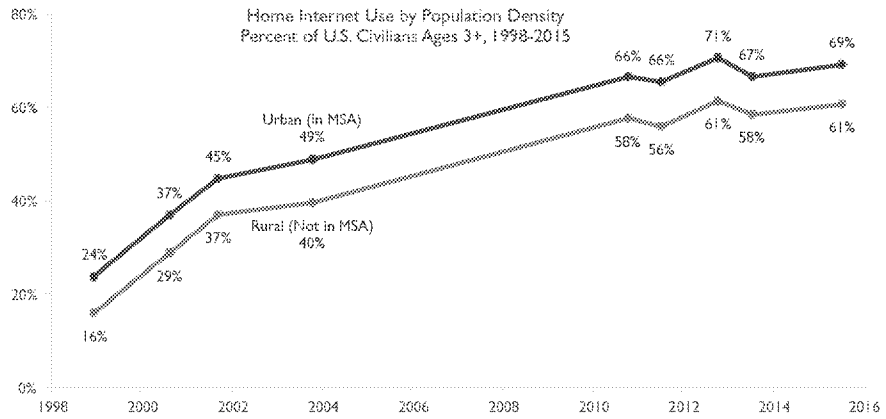
from accessing the innovations and products of rural America. Additionally, this digital divide means rural American businesses miss opportunities to serve new global customers.



Source: National Telecommunications and Information Administration, Digital Nation Data Explorer https://ntia.doc.gov/data/digital-nation-data-explorer

The lack of complete e-connectivity in rural areas can be attributed to many factors. It is particularly challenging and expensive to deploy broadband networks to rural America—namely due to low population density and challenging geography. In addition to these difficulties, broadband providers often face bureaucratic obstacles to building a network, including arduous application processes, lack of access to infrastructure, and burdensome regulatory reviews.

Rural e-connectivity supports economic development for the whole nation through access to capital and global markets, job training and workforce development, innovation and technology and enhanced quality of life. Throughout this report, examples illustrate that robust and reliable e-connectivity is a critical ingredient for rural prosperity.

Connectivity is especially vital for the original "Made in America" industry – agriculture – to increase farm productivity to feed the world. The U.S. Census Bureau estimates that the U.S. population is expected to rise to almost 400 million by 2050. To supply this number of people with food, American farms need reliable, real-time internet connectivity to oversee operations in the fields, manage finances, and respond to international market conditions. To match world food demand, innovative technologies such as precision agriculture can ensure American farms reach the necessary levels of productivity. Such methods require every part of the farm to be connected to the worldwide web, not just the farmhouse.

Photo credit: Getty Images

Unlocking rural prosperity by promoting e-connectivity for all Americans also provides the opportunity to achieve a higher quality of life through modern teleworking, telemedicine and telehealth, and digital learning. For instance, the shifting digital economy provides new opportunities for rural Americans seeking the ability to work from home. According to the Bureau of Labor Statistics, from 2003 to 2015, the share of workers doing some or all of their work away from their office increased from 19 to 24 percent nationwide.

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Photo credit: Getty Images

High-speed internet access can also address the gap in health services in rural communities. Telehealth and telemedicine allow rural residents to connect to distant healthcare professionals, conduct remote monitoring of chronic medical conditions, and access specialists that may not work in their local health facilities. Remote healthcare through telehealth and telemedicine also reduces the cost of care, improves patient outcomes, and reduces the burden on patients.

E-connectivity also allows rural residents to access a broader range of educational opportunities. Digital learning is growing rapidly and likely to be particularly impactful for more remote rural areas that may not have access to the same educational resources as larger or more urban communities. According to the National Center for Education Statistics, the share of undergraduate students taking digital education courses grew from 16 percent in 2003-04 to 32 percent in 2011-12. However, many rural elementary and secondary schools do not have adequate connectivity. The Federal Communications Commission estimates that 16 percent of schools in small towns and 21 percent of schools in rural areas still lack a fiber connection.

Solving the broadband access gap in rural America will require a concerted effort to encourage deployment of new infrastructure and innovative business models that promote capital investments. The development and implementation of other strategic infrastructure systems across the United States was key to ensuring past generations of rural Americans weren't left behind as the rest of the world modernized, including rural electrification, rural telephone service, and the Eisenhower Interstate Highway System. The economic equalizer of our day is high-speed internet to every rural community and production site, connecting rural America's potential to a world of opportunity.

Past efforts to connect rural America have resulted in the allocation of substantial amounts of federal funds for broadband deployment and, while such investments made important contributions, our country has not fully achieved the connectivity needed for success in the economy of today and tomorrow. Although capital investment is one aspect of bridging the divide, far too many government policies stifle network buildout. By streamlining the deployment process, allowing access to existing infrastructure, and reducing barriers to buildout, risk can be reduced and providers can be encouraged to expand networks throughout rural America.

As we modernize and reduce regulations, we should also consider the full range of means to connect rural communities, including satellite, fixed wireless, and cellular networks. These technologies can be less expensive to deploy than traditional wired networks and are rapidly improving in quality. A technology-neutral, service-focused approach to broadband deployment may allow for more rapid and widespread connectivity.

Rural prosperity can only truly be achieved by connecting rural America to high-speed internet. It is critical to act quickly as the need for rural e-connectivity is growing every day. We must also ensure rural America won't be left behind as we move toward next-generation networks like 5G, and emerging technologies like the Internet of Things. Prioritizing e-connectivity for rural America is the key to generating prosperity, investment, and innovation.

Photo credit: Getty Images

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Objectives & Recommended Actions

1. **Establish Executive Leadership to Expand E-connectivity Across Rural America** – The Task Force recommends that the Executive Office of the President develop and implement a strategy based on best practices to deploy rural e-connectivity across the nation. The recommended participating offices and agencies include the National Economic Council, White House Office of Science and Technology Policy, Office of American Innovation, Department of Agriculture, National Telecommunications and Information Administration under the Department of Commerce, the Federal Communications Commission, the Department of Education, the Department of Health & Human Services, the Department of the Interior, and other Departments and agencies needed.

2. **Assess State of Rural E-connectivity** – Coordination by the Executive Office of the President of a multi-sector assessment of the current state of affordable rural high-speed internet access, including identification of infrastructure and service gaps. Such a data-driven analysis of service levels, reliability, and affordability should inform the creation of the rural e-connectivity strategy. An analysis of total capital investment necessary for rural e-connectivity should be conducted, including existing federal and non-federal subsidies.

3. **Reduce Regulatory Barriers to Infrastructure Deployment** – Revise federal regulations to encourage investment in reliable, high-speed internet in rural areas, expedite approval and internal review timelines and streamline permitting processes to promote increased build-out of infrastructure. The federal government should coordinate any regulatory reform efforts with those being pursued by the Administration's efforts to reduce regulatory burdens under EO 13771, "Reducing Regulation and Controlling Regulatory Costs."

Photo credit: Getty Images

4. **Assess Efficacy of Current Programs** – Simultaneous with the above actions, the Task Force recommends an assessment of existing federal grants and subsidy programs devoted to or used for deploying e-connectivity. The assessment should include identification of duplicative and overlapping programs throughout the federal government, and recommendations to enhance the coordination of various funding streams to maximize impact.

5. **Incentivize Private Capital Investment** – Encourage free-market policies, laws, and structures at federal, state, tribal, and local government levels to create an environment conducive to investment, including public-private partnerships. Such partnerships can bring innovation and investment of sustainable capital to bridge the e-connectivity gap in the fastest and most affordable manner.

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Call to Action #2: Improving Quality of Life

Ensuring rural Americans can achieve a high quality of life is the foundation of prosperity. Quality of life is a measure of human well-being that can be identified though economic and social indicators. Modern utilities, affordable housing, efficient transportation and reliable employment are economic indicators that must be integrated with social indicators like access to medical services, public safety, education and community resilience to empower rural communities to thrive. Focusing and delivering key federal reforms will enable rural Americans to flourish and prosper in 21st Century communities.

Rural America offers opportunities to attain a high quality of life often characterized by abundant natural resources, a less hurried pace of life, and an affordable cost of living. As the modern economy becomes more mobile, the places that Americans choose to live is increasingly influenced by the quality of life in their home communities. For example, over the past 40 years, a desire to live close to natural amenities such as lakes, seashores, mountains, and areas with a moderate climate have driven population growth in many rural regions. This is especially seen in the Southeast, Great Lakes, Mountain West, and Pacific Coast regions. Within these outside areas, such features dramatically enhance the quality of life for rural communities and exhibit a large share of employment and earnings in recreation-related activities. Many of these recreation-based economies were hard hit by the Great Recession, slowing in population growth from 4.6 percent during 2002-08 to only by 1.2 percent during 2010-16 according to the U.S. Census Bureau. However, these areas continue to grow faster than other types of rural areas.

Despite the unique quality of life that some rural communities can provide, others face long-standing and emerging challenges. For example, there are two very different types of rural communities that tend to have a consistently high number of people leaving. One type has high poverty rates – more than 25 percent – and is hindered by low educational attainment and high unemployment. The other type is generally prosperous but tends to be remote, thinly settled, and lacking in scenic appeal for prospective residents or tourists. In general, quality of life deficits appear to be a main drawback for these communities.

In some places, housing affordability has become a major challenge, either because housing costs have risen rapidly or because incomes are insufficient for self-supported housing at market rates. These burdens are increasing among rural renters, in both high-amenity areas and in communities with high poverty rates.

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In such parts of rural America, addressing the shortage of local jobs and a lack of connection to those job opportunities will be a major factor in overcoming these challenges.

Transportation is often a challenge for many rural communities as well. According to the U.S. Bureau of Transportation Statistics, people living below the poverty level are less likely to own or have access to a personal vehicle to get to work. Compared to other commuters, people below the poverty level are more likely to use lower-cost options such as carpooling, taking public transportation, or using other transportation modes, but such options are less available in rural areas. The Department of Transportation's Federal Transportation Administration supports numerous small town and rural transportation systems in connecting their citizens to jobs, healthcare, and other critical destinations through various programs. Additionally, other federal agencies provide funding for rural transit services for specific trip purposes, such as visits to medical facilities. However, the presence of multiple funding streams often results in multiple networks serving the same rural area. Some states and localities around the nation have instituted methods to optimize federal funding programs into coordinated and unified systems to serve their citizens, yet creating and administering such coordination is an arduous task. As a result, many rural transit services remain expensive to subsidize and unable to fill the transportation needs of rural businesses and citizens.

Photo credit: Getty Images

Rural road safety is another quality of life issue that federal, state, and local governments are working to address. According to the Department of Transportation, more than half of all traffic fatalities in 2014 occurred on rural roads. In addition, the fatality rate per vehicle-mile-traveled in rural areas was 2.4 times higher than the fatality rate in urban areas, though that figure decreased by 24 percent between 2005-14. Moreover, almost two-thirds of drivers and passengers in rural crashes died at the scene in 2014, compared to just 35 percent in urban crashes. Such ratios were due in part due to higher speed crashes and increased distances to first responders and hospitals.

The modernization of built infrastructure for rural utilities is also an important component of quality of life and rural prosperity. This includes the full installation of smart grid technology throughout rural power systems. Rural electric cooperatives have begun deploying fiber optic networks throughout their service areas to meet the current, growing, and future demand for smart grid services, such as demand side management, distributed generation and renewable integration, and smart home technologies, as well as increased grid security. The ability to dynamically manage energy use is critical to ensuring network reliability, enhancing system-wide efficiency and keeping electric rates affordable for rural residents and businesses. The high-speed networks, connecting electric system infrastructure and even direct connections to customer locations, can also provide a platform and catalyst for fiber to rural homes.

Photo credit: USDA Flickr

Safe drinking water and sanitary waste disposal systems are vital for achieving a high quality of life. Additionally, water infrastructure is essential to many rural industries, e.g., farming, manufacturing, and mining (Kearney et al., 2014). It is also important to households, with more than 86 percent of the U.S. population relying on public water

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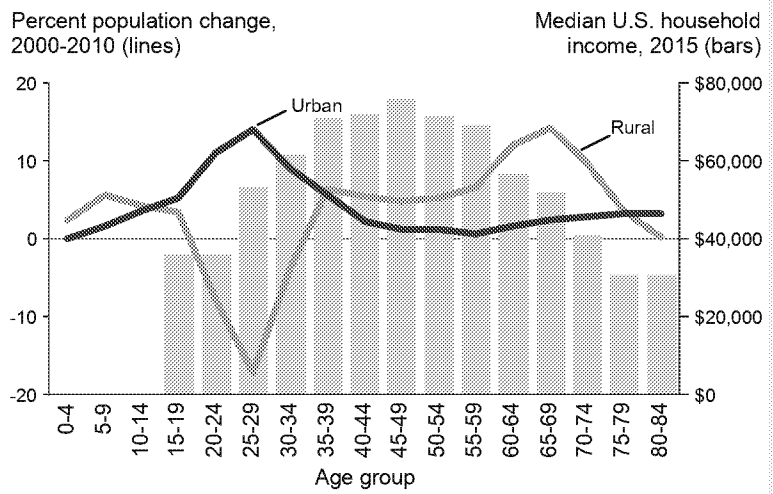
supply systems (EPA, 2013). Overall, water infrastructure is increasingly important to making rural areas attractive places to live and as a driver of rural recreation and tourism.

Many poor and remote rural areas also lag in high-speed internet connectivity and easy, fast access to other forms of infrastructure. These often include highways, airports, water and sewer facilities, care centers, housing options, and quality educational facilities. Building water treatment plants, hospitals, schools, homes, transportation systems and other impactful community infrastructure not only creates jobs, but also increases long-term aggregate demand for goods and services within a community as well as contributes to rural prosperity development.

As a byproduct of differing levels of housing and infrastructure, the population of rural America is neither steady nor growing and does not match with its potential. In fact, varying rates of growth and decline in rural America depend on age and other considerations that highlight both the challenges and opportunities related to quality of life in rural communities. In the years after high school, young adults seeking better educational and career opportunities disproportionately leave rural areas for urban destinations. Then, during more advanced periods of personal and professional life, Americans tend to migrate to small cities and rural communities. Therefore, the population loss among those in their twenties is partly regained by adults in their thirties who bring technical and leadership skills back to their rural communities and focus on raising their children.

Rural/urban population change from net migration and U.S. median household income



Source: Net migration estimates from the University of Wisconsin-Madison and income from the Current Population Survey.

Such a trend yields a positive migration pattern to rural areas by adults in their late 30s, and also in their mid- 40s and 50s, when median household incomes reach their peak. This pattern further increases among early retirees (ages 65-69), especially focused on areas with features such as natural resource access and healthcare options. The migration of rural residents indicates the critical role that quality of life, access to healthcare, effective schools, and other vital services can play in sustaining rural populations and fostering long-term rural prosperity.

Overall, the rural population is shrinking for the first time on record and it is not just due to the migration of young adults to urban areas. Fewer births, increased mortality among working-age adults, and an aging population are health factors that are driving numerous other aspects of rural social and economic life. For example, many communities are challenged in terms of access to medical services and primary care due to their relative remoteness from population centers. The recent rise in rural mortality rates among adults ages 35-54 can be tied to a dramatic increase in mortality from natural causes - e.g., heart, liver, and respiratory diseases, or cancer - and to the opioid epidemic.

While the opioid epidemic affects both rural and urban areas, the rise in natural cause mortality is largely a rural problem and represents a growing threat to quality of life and rural prosperity. If these trends are left unaddressed, the rural population will not only continue to decline but the dependency ratio will increase.

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As a result, the number of people likely to be not working (children and retirees) will overwhelm the number of people who are likely to be wage earners (working-age adults) and it will become increasingly difficult to achieve a high quality of life.

Objectives & Recommended Actions

1. **Advance Educational Opportunities** – Create a strategy for public-private partnerships to complete the connection of all rural Pre-K through Grade 12 and Community/Technical Colleges to high-speed, high-capacity internet to maximize the use of digital learning, especially the deployment of curricula for STEM subjects most relevant to rural economies such as agriculture, manufacturing, military, and business. These opportunities should include the Department of Agriculture, Department of Labor, and Department of Education, and other pertinent agencies aligning on implementation along with key stakeholders. A primary activity should be conducting outreach and designing the optimal set of roles for various government agencies and private sector organizations.

Photo credit: Getty Images

2. **Modernize Healthcare Access** – Assure that the policies and roles of the federal government support access to medical treatment facilities, including health clinics, telemedicine, vocational and medical rehabilitation facilities, dental clinics, assisted living, nursing homes and memory care facilities. Better coordination of the sources of capital that support high-need providers in rural areas is needed, including current federal funds and potential new private funds. Implementation of best practices can be identified and facilitated to enhance access to primary care and specialty providers through telemedicine. Improved access to mental and behavioral care, particularly access to prevention, treatment, and recovery resources is vital to address the nationwide opioid crisis and other substance misuse in rural communities. The Task Force recommends a multi-agency approach to align federal policies and programs for rural healthcare modernization within the Department of Health & Human Services, Department of Veterans Affairs, Department of Housing & Urban Development, Department of Interior, Department of Agriculture and other related agencies. The objective would be to prioritize actions and streamline current funds and financing tools of federal, state, tribal and local governments, as well as private sector organizations. Within existing resources, a more efficient deployment of current taxpayer resources can more effectively address the rural healthcare needs.

3. **Innovate Options for Rural Housing** – Develop a set of shared best practices for increasing homeownership, reducing homelessness in rural communities, and building robust community infrastructure. Such practices should include recommendations for federal, state, tribal and local action to strengthen investments in rural housing and provide technical assistance. The Task Force recommends options such as the Department of Housing & Urban Development, Department of Veterans Affairs, Department of Agriculture, Department of Labor, and Department of Education jointly evaluating

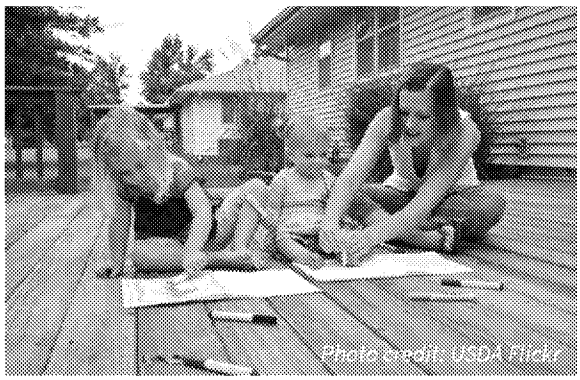
Photo credit: USDA Flickr

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federal rural housing policies and programs, and targeting existing resources to best support sustainable housing in rural communities. To optimize rural housing options for the workforce needed in the current and future economies, private sector organizations' resource deployment to rural areas can also be incentivized.

4. **Improve Transportation Options** – Targeted investment within current programs that are outcomes-driven can further address the disproportionately high fatality rate on rural roads, including multi-agency collaboration on policies. States and local transit systems can save tax dollars and more effectively serve rural citizens' mobility needs to job sites, education centers, and healthcare facilities, by streamlining federal policies, programs, and funds that support rural public transit systems. Interagency coordination could include the Department of Transportation, the Department of Health & Human Services, the Department of Labor, and other relevant agencies better aligning policies for rural transit services based on locally-created rural community economic development strategies.

5. **Modernize Rural Utilities** – Advance and expedite the important infrastructure modernization and technology investments that can be prioritized for rural communities' electric power and water systems. Existing resources can be utilized to further invest in rural communities' water infrastructure. For smart grid deployment, enhancements to federal financing programs at the Department of Agriculture can be executed in further conjunction with the Department of Energy. In addition, the Federal Communications Commission and the Department of Agriculture can further coordinate programs on the installation of high-speed e-connectivity in rural communities.

Photo credit: Getty Images

6. **Improve Community Resiliency Planning** – Align federal economic development policy and resources in a manner that enhances rural prosperity. The Task Force recommends that a strategy is built out that includes best practices in site selection, workforce development, utility and transportation infrastructure, and use permitting. It could also encourage community resilience at the local level by requiring that federal planning strategies, such as the Economic Development Administration's Community Economic Development Strategies (CEDS), include identification of strategic industries for rural regions and plans for disaster preparedness and recovery. For example, coordination between the various agencies and programs of the Department of Agriculture can enhance the effectiveness of all federal agencies' efforts to support economic growth and resiliency in rural America, including CEDS, which can be used to drive federal investment in rural areas per these locally-created prosperity plans.

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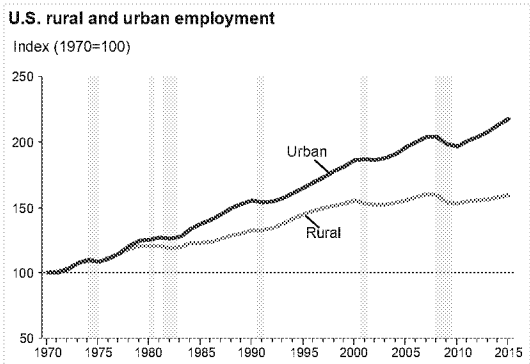
Photo credit: USDA Flickr

Call to Action #3: Supporting a Rural Workforce

To grow and prosper, every rural community needs job opportunities for its residents, and employers need qualified individuals to fill those needs. This requires identifying employment needs, attracting available workers from urban and rural centers alike, and providing the workforce with training and education to best fill the available needs. There are many opportunities to partner with local businesses and organizations to identify gaps, to work with all levels of educational institutions to provide career training and development, to fine-tune existing training programs, and to grow apprenticeship opportunities to develop the required workforce. Providing rural communities, organizations, and businesses a skilled workforce with an environment where people can thrive will grow prosperous communities.

Since 1970, rural employment has grown slower than in urban areas (60 percent compared with 120 percent in urban areas), according to the Bureau of Economic Analysis. Rural employment recovery was especially slow after the Great Recession (2007-09), a fact concerning to future rural prosperity. Notwithstanding, there were 19 million workers in Rural America in 2016, which was approximately 13 percent of the U.S. total.

Certain industries, such as agriculture, forestry, mining, and manufacturing, are especially important to rural America and all account for larger shares of employment and earnings in rural compared to urban areas. The Bureau of Economic Analysis estimates that farm employment (both self-employed farm operators and their hired workers) accounted for about 6 percent of all nonmetro employment in 2015, compared to less than 1 percent in metro areas. Additionally, farm employment leads to downstream jobs, which can lead to rural economic growth. While production agriculture hires 1.2 million workers annually according to the U.S. Census Bureau, farmers face instability due to the lack of available American citizens and lawful permanent resident workers to fill these jobs. This has led some farmers to hire illegal foreign labor and the underutilization of the H-2A visa program to hire legal foreign workers. When farmers face this instability, they



Source: Bureau of Economic Analysis. Employment is measured as number of jobs; rural/urban status is based on 2013 metropolitan designations. Gray bars indicate recessions.

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often elect to downsize their operations or plant more mechanized commodities, which negatively impacts the local labor market.

Turning to manufacturing, the Bureau of Economic Analysis reports that the industry employs a larger share of the nonmetro workforce compared to the metro workforce (11 percent versus 6 percent in metro areas). Additionally, other more consumer-oriented services have similar shares of jobs and earnings in both nonmetro and metro areas, as does the recreation sector.

Lastly, healthcare and the ability to recruit and retain healthcare providers and facilities is also critically important to rural prosperity and unfortunately the slower overall population growth has historically detracted from an overall growth in total healthcare employment.

Photo credit: Getty Images

Within these sectors and others, there is much opportunity for growth in rural America. This is shown by evaluating occupations employing 150,000 or more people in rural counties in 2015. Seven of these 33 occupations were projected by the Bureau of Labor Statistics to grow by 10 percent or more nationally between 2014 and 2024 (see table). The top four occupations are all healthcare-related: personal care aides; nursing, psychiatric, and home health aides; licensed practical and licensed vocational nurses; and registered nurses. Their educational requirements range from no formal credential (for personal care aides, who earned a median salary of $21,920 per year in 2016, and whose employment is projected to grow by 26% nationally over ten years) to a four-year college degree (for registered nurses, who earned a median salary of $68,450 per year in 2016, and whose employment is projected to grow by 16% nationally over ten years). By contrast, rural occupations serving a national or international market may more nearly mirror the national growth rate. For example, customer service representatives, an occupation projected to grow by 10% in ten years, may be employed in rural call centers serving broader markets. Business accountant and auditor employment is projected to grow by 11% over ten years at the national level, including rural businesses that are tied to national product markets.

Occupations with 150,000 or more rural workers and with projected national growth rates of 10 percent or higher, 2014-2024.

Occupation	National Job Growth, 2014-24	National Median Wage, 2016	Education Required	Experience Required	On-The-Job Training Required
Personal care aides	26%	$21,920	No formal credential	None	Short-term
Nursing, psychiatric, and home health aides	24%	$25,159	High school diploma or equivalent	None	Short-term
Licensed practical and licensed vocational nurses	16%	$44,090	Post-secondary non-degree award	None	None
Registered nurses	16%	$68,450	Bachelor's degree	None	None
Construction laborers	13%	$33,430	No formal credential	None	Short-term
Accountants and auditors	11%	$68,150	Bachelor's degree	None	None
Customer service representatives	10%	$32,300	High school diploma or equivalent	None	Short-term

Sources: BLS Employment Projections (https://www.bls.gov/emp/); Occupational Employment Statistics (https://www.bls.gov/oes/); and the 2015 and 2016 American Community Surveys.

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Moreover, it is necessary to look globally as a means for job creation. U.S. agricultural exports support output, employment, income, and purchasing power in both the farm and nonfarm sectors. The Department of Agriculture's Economic Research Service estimates that in 2015 each dollar of agricultural exports stimulated another $1.27 in business activity. Additionally, every $1 billion of U.S. agricultural exports in 2015 supported approximately 8,000 American jobs throughout the economy. Total agricultural exports in 2015 supported 1,067,000 full-time civilian jobs, which included 751,000 jobs in the nonfarm sector, according to the Department of Agriculture.

Photo credit: Getty Images

There are significant opportunities for the rural workforce to prosper and grow, but reviewing available data and identifying gaps to match curricula and training programs are required to best serve employer needs. Successful workforce development strategies strive to create well-educated and skilled individuals whose qualifications meet the requirements of the contemporary economy. Career mapping within educational systems – beginning at K-12 and continuing through higher education – is necessary to help prepare the workforce of the future to fit rural economies. Many rural communities perform well relative to urban areas in many measures of school quality and in the rate of college attendance among their young adults, which is more difficult to achieve for the most remote rural areas and for those with relatively large shares of low-income residents. Ultimately, strong primary and secondary schools that focus curricula and offer strong career guidance are fundamental to generating a robust and ready workforce needed in rural America.

As we develop the workforce of the future, it is also important to prepare current, available workers to fill both existing and newly created jobs. Higher education is becoming increasingly unaffordable and many colleges and universities fail to help students graduate with the skills necessary to secure high paying jobs in today's workforce. Along with fine tuning available public and private training programs, expanding apprenticeships may enable more Americans to obtain relevant skills and high-paying jobs. Apprenticeships provide paid, relevant workplace experiences and opportunities to develop skills that are valued by employers.

Objectives & Recommended Actions

1. **Connect Rural Skillsets to Jobs of the Future** – Before we can provide suitable resources, we must identify existing job demands, skillset gaps, and community needs. A robust interagency effort is needed to study current gaps and job demands in all sectors to better specialize our educational and training efforts. We recommend that interested agencies complete a study which clearly identifies these gaps. That survey will then be used to promote curricula rationalization methods in K-12 education, secondary educational institutions, and technical training programs. This effort will better link educational and career guidance given at an early age to local economic needs. We must also focus on developing universally adaptable skills that provide flexibility in a rapidly changing environment. This research is the integral first step to best serve rural communities and ensure we are training for jobs that are needed, but also provide an adaptable workforce as new skillset are needed.

2. **Promote and Expand Apprenticeship Programs** – The Task Force identified clear needs in the healthcare and trade industry sectors while rural businesses and communities struggle to find talent

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to fill jobs in these sectors. The Task Force recommends that federal agencies promote and assist local businesses in the expansion of apprenticeship programs. In the near term, we support creating an interagency workgroup to identify priorities and develop apprenticeship programs for rural America.

3. **Connect Veterans to Underutilized Training Programs** – Despite a clear effort to reach these available and talented individuals that are ready and willing to work, programs are not easily accessible and often siloed within the federal agencies; therefore, not maximizing the potential talent lying within this population. The federal government must do better to connect, streamline, and eliminate duplication across the agencies to better reach and serve veterans. We recommend an interagency inventory of available veterans' programs, a focused effort to eliminate duplication by creating a one stop shop for better customer service, and implementing metrics to measure veterans' access and use of training programs.

Photo credit: USDA Flickr

4. **Improve Rural Access to Education and Training** – Job opportunities, training programs and educational materials are not easily accessible by businesses and jobseekers. As we work to eliminate interagency silos, there are ways to better market the resources already available to rural populations using existing resources.

    a. **Improve Interagency Collaboration** – The Department of Education and the Department of Agriculture should strengthen the collaboration between the two departments, their stakeholders and partners to improve access to quality education in rural communities and create opportunity for children in rural America. The interagency coordination will (1) increase investment within existing resources for a wide range of daycare, primary, elementary, and secondary education facilities, including traditional public and charter schools, (2) improve the access of rural communities to resources provided by both Departments, (3) make capital available through USDA for strengthening existing or constructing new educational facilities, and (4) provide capacity building and technical assistance.
    b. **Catalog Federal Training Programs** – Federal government training programs should be catalogued on a single online platform to improve access to these materials and programs.
    c. **Encourage Interagency Use of Federal Infrastructure** – The Department of Agriculture has a broad physical network with local and regional offices across America. We encourage all federal agencies to partner with the Department of Agriculture to house certain educational materials or host periodic training programs in those local offices.

5. **Ensure Access to Lawful, Agricultural Workforce** – Production agriculture is often a key economic driver in rural communities. Many on-farm jobs are seasonal and very physically demanding. Farmers often have difficulty finding American citizen and lawful permanent resident workers to fill these jobs. This can lead some farmers to scramble to find workers to plant, prune, and harvest fruits and vegetables or to tend to livestock. As labor instability grows, seasonal farmers are increasingly turning to H-2A visa program to ensure that their foreign-born workers are working legally in the United States. The inefficiencies and administrative burden of the H-2A program are well-communicated by farmers. The White House is addressing farmers' concerns through an interagency effort to implement policy and regulatory changes to improve the program H-2A program. The goal of this initiative is to ensure that farmers have access to the lawful workforce that is needed.

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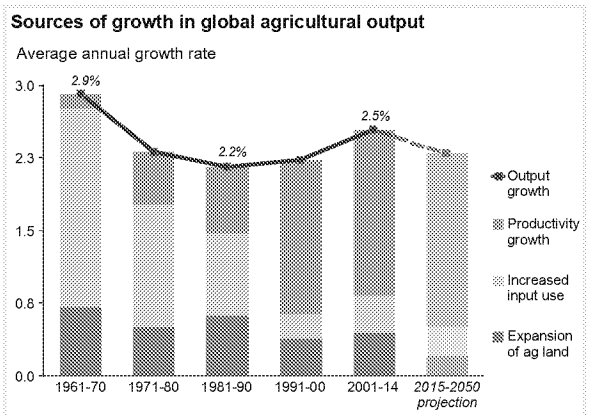
Photo credit: Getty Images

Call to Action #4: Harnessing Technological Innovation

By 2050, the U.S. population is projected to increase to almost 400 million people, and rising incomes worldwide will translate into historic global growth in food demand. To feed a hungry world, we will need to harness innovation to increase output across American farmlands. In addition to increased crop yields, technological innovation can improve crop quality, nutritional value, and food safety. Innovations in manufacturing, mining, and other non-agricultural industries can enhance worker efficiency and safety. At the core of these developments that will further grow the rural economy is the expansion of STEM education, research, regulatory modernization, and infrastructure. Leveraging these innovations in an increasingly data-driven economy will also require further development of rural data management capabilities.

From agriculture to manufacturing to mining, innovative technologies and practices drive long-term growth and prosperity in rural America. The United States is the world leader in agricultural production and technology, and rural America is home to many of the best, and most innovative farmers in the world. Over the past 30 years, U.S. agricultural productivity has increased by nearly 50 percent, and by almost 14 percent in the 21st century (Wang et al., 2017). High productivity has enabled U.S. agriculture to be the world's most dependable source of food surpluses to help feed a hungry world.



Source: USDA Economic Research Service, *International Agricultural Productivity* data product.

According to the U.S. Census, the U.S. population is projected to increase to 400 million people by 2050. As the world's leader in farm production and innovation, the United States can leverage emerging agricultural technologies and innovative practices to meet the economic opportunity and the humanitarian imperative. Further, while working to meet this challenge in just 32 growing seasons, it is critical that productivity growth not rely on more cultivated land, water, or energy, but instead harness the power of innovation and technology. The U.S. contributes to global food security not only by being a breadbasket, but also through advances in food, agricultural and nutrition sciences, and their world-wide dissemination.

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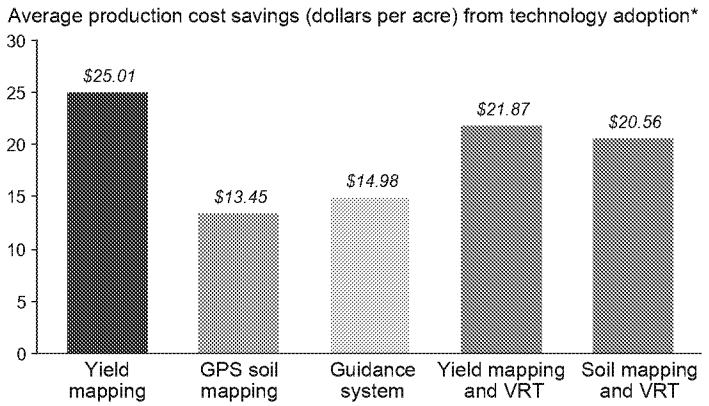
Enabling technological innovation in agriculture will improve the efficiency of the American farmer, increase sustainable use of American resources, and enhance the quality of American agricultural output, all while creating new American jobs and increasing rural incomes. Over the past two decades, American farmers have led high rates of adoption of technologies including automated farm equipment, satellite and aerial imagery, variable rate technology (VRT), genome editing and genomic selection, and high-speed internet.

Corn production cost savings from precision agriculture technology adoption



GPS = global positioning system. VRT = variable rate technology.
*Per acre production costs include expenses for seed, fertilizer, pesticides, paid/unpaid labor, machinery expenses (not capital investments), fuel and repairs, and custom services.
Source: USDA Economic Research Service model estimates using data from USDA, 2010 Agricultural Resouce Management Survey, phases II and III.

Precision agriculture technologies that optimize input application using VRT are playing an increasing role in farm production. To determine the optimal application of inputs, farmers require data on field conditions to calibrate production practices. Technologies such as global positioning system (GPS) guided machinery, soil and yield mapping, embedded sensor networks, and aerial imagery increase capabilities to collect data with sufficient temporal and spatial resolution. The addition of GPS technologies on farm vehicles has enabled greater automation of routine farm tasks, and provided field operators access to timely, accurate crop data to improve seeding of field crop rows. Integrated networks of soil sensors that provide data on moisture and nitrogen fixation, satellites, and unmanned aircraft systems (UAS) equipped with multispectral sensors provide maps of crop yield variability. VRT enables farmers to increase crop yields, while reducing water usage, and minimizing the need for fertilizer, chemicals, and pesticides.

If the ease of use and cost of implementation of precision agriculture technologies can be improved, they have the potential to boost profits for more producers as well as yield environmental benefits. Utilizing key precision farming technologies can produce a 3-18 percent boost in crop yield via targeted fertilizing, planting, spraying, and irrigation, according to Goldman Sachs Global Investment Research. In addition, case studies conducted by AgPixel found there are savings to be gained with better use of products such as nitrogen, herbicide, and water that can add up to $28 per acre. Such gains could mean the difference between successes or failure for many agriculture-based businesses.

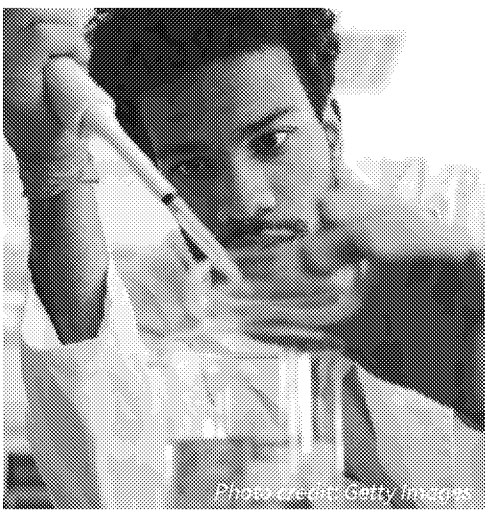


Photo credit: Getty Images

Biotechnology is another area of U. S. leadership, being a sector that has driven innovation in fuels, chemicals, manufacturing, and agriculture. In 2016, biotech crops were grown on over 170 million acres in the United States, including over 92% of corn, soybean and cotton total acreage, according to the Department of Agriculture's National Agricultural Statistics Service. Globally, the biotechnology sector is a driver of the "fourth industrial revolution," and presents an incredible opportunity for American farmers and rural communities to thrive at the forefront of innovation. Scientific advances in biotechnology from universities have helped create world class firms that export superior crop seed and other biotech innovations in world markets. Advancements in genome editing and genomic selection have produced favorable crop and livestock traits,

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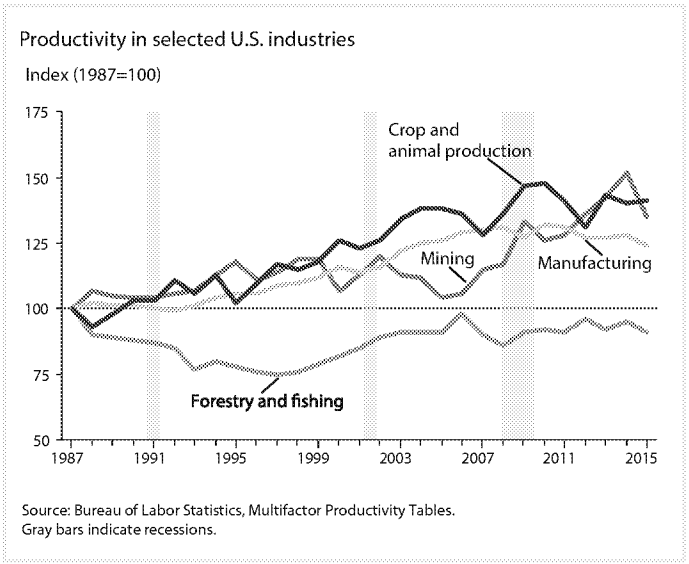
including resistance to drought, disease, and heat; enhancements to nutritional value; and increased resource efficiency. Those technologies, combined with public and private research and development investments, have enabled U.S. farmers to increase the supply and quality of crop and livestock commodities using fewer resources and at lower costs of production.

Productivity improvement in primary industries can increase the profitability, competitiveness, and growth of upstream manufacturing sectors such as food manufacturing, textiles, and wood products. It can also create jobs in the processing industries - transportation and finance - which are needed to support those sectors. However, productivity growth has slowed over the past three decades, especially in the forestry and fisheries sector. Employment in the mining sector, which accounts for a higher share of employment in rural areas compared to urban centers, has trended downward in recent years. In general, studies have found an urban innovation advantage over rural areas in non-manufacturing sectors, especially service sectors.



Non-agricultural rural industries that have shown high levels of innovation include the telecommunications and commercial electronics industries (Wojan & Parker, 2017). With these markets leading the way in rural innovation, the need for high-speed internet access in rural America is heightened.

Photo credit: Getty Images

Prospects for innovation in agricultural and food industries are evidenced by their attractiveness to private-sector venture capital. Recent years have seen a sharp increase in venture capital directed at these sectors, especially for information technology and biotechnology innovations. According to AgFunder, during 2014-15, venture capital funds invested at least $6.9 billion in a range of agriculture-related innovations, including precision agriculture and e-commerce food marketing. Most of these venture capital investments have been directed at U.S. firms, but some have involved major investments with firms located in Europe, Israel, China, and elsewhere.

Federal and state research institutes use a variety of means to collaborate with the private sector. Some of the venture capital startups are spinoffs from innovations developed in these laboratories or through joint research efforts with private firms. Other major contributors are the more than 100 federally-funded U.S. Land Grant Colleges and Universities, which are key providers of STEM training as well as innovators across many sectors, and have contributed to U.S. world leadership in many high-technology fields. Innovations emanating from these institutions find their way into industries through scientific publications, patents, direct university-industry partnerships, and STEM-trained graduates. Furthermore, these institutions help create internationally-competitive firms and industries.

Many of the innovative and high-tech advances discussed above emanate from educating rural Americans. Ensuring that all rural Americans have access to educational opportunities is critical to enhancing

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productivity and competitiveness throughout America. Educational achievement highly correlates with measures of regional economic prosperity and recent data show that rural Americans are increasingly well educated. According to the U.S. Census Bureau, only 15 percent of rural adults ages 25 and older do not have a high school diploma, and nearly 3 out of 10 rural adults now have an associate's or bachelor's degree or higher. These data suggests rural America is well-positioned to ensure the flow of new technologies and innovations that are required for rural prosperity.

Photo credit: Getty Images

Despite American leadership in technological innovation in agriculture, federal regulations are currently limiting both precision agriculture and biotechnology applications. For example, UAS can provide aerial crop surveys with greater resolution than satellite imagery, and at a frequency desired by farmers. However, the Federal Aviation Administration regulations on commercial UAS operations limit the ability of farmers to conduct these surveys for precision agriculture applications.

On the biotechnology front, better coordination of the Department of Agriculture, Environmental Protection Agency, and Food and Drug Administration regulations on genetic modification of crops and livestock is needed to reduce barriers to commercialization of safe, beneficial and improved genetically engineered entities. Our regulatory system must protect public health, welfare, safety, and our environment while promoting economic growth, innovation, competitiveness, and job creation.

In addition, the growing rural needs for large data collection and processing require the necessary communications infrastructure to handle the quantities of data needed. Big Data is proliferating across all aspects of the global agricultural supply chain and will require policy development that protects farmers' privacy, U.S. companies, and U.S. national security interests, if the information revolution is to be fully realized in rural America.

Objectives & Recommended Actions

1. **Coordinate Federal Farm Production and Food Safety R&D** – To sustainably feed the world, ensure a safe food supply, and keep families on the farm, modern science and technology must be applied. The U.S. needs research and development, as well as a regulatory system that promotes rather than discourages innovation and discovery. The National Science and Technology Council (NSTC) should extend the charter of the Subcommittee on Food and Agriculture to coordinate strategies across the federal government to advance innovation in food and agriculture R&D. The Task Force recommends that the subcommittee catalog, coordinate, and leverage ongoing investments in technology to drive innovation in rural America and deliver safe, transformative technologies to farmers and consumers. The subcommittee should also develop an R&D strategy that identifies and creates opportunities for the technology sector to invest in rural communities.

2. **Improve Rural Management of Big Data** – The U.S. government needs a plan and a stronger vision for how big data can be better leveraged to revolutionize the agricultural sector. The NSTC Subcommittee on Food and Agriculture should develop best practices for big data management in agricultural applications.

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3. **Increase Public Acceptance of Biotech Products** – The Department of State, the Department of Agriculture, and other relevant agencies should develop a communications strategy to increase acceptance of biotech products and open and maintain markets for U.S. farmers abroad. To complement this strategy, the U.S. Trade Representative should initiate interagency deliberations to identify an international strategy that removes unjustified trade barriers and expands markets for American products.

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4. **Develop a Streamlined, Science-based Regulatory Policy for Biotechnology** – The federal government should continue efforts to modernize the federal regulatory system for biotechnology products. These efforts will improve transparency, coordination, and predictability of the system and support public confidence by assessing products in a risk-based manner, providing predictable pathways for commercialization. These efforts should be continued to ensure the success of consumers, farmers, and their products. More efficient and effective communication must be employed to build evidence-based confidence in the safety of products for health and the environment. It is critical that these improvements: (1) maintain high standards that are based on the best available science and that deliver appropriate health and environmental protection; (2) establish transparent, coordinated, predictable, and efficient regulatory practices across agencies with overlapping jurisdiction; and (3) promote public confidence in the oversight of the products of biotechnology through clear and transparent public and diplomatic engagement. The Task Force recommends that the Administration:

    a. **Coordinate Federal Regulation of Biotechnology Products** – Reaffirm strong support of the Coordinated Framework for the Regulation of Biotechnology, and the corresponding National Strategy for Modernizing the Regulatory Systems for Biotechnology Products.
    b. **Coordinate Interagency Action Through the Office of Science and Technology Policy** – Endorse and empower the Biotechnology Working Group, led by the White House Office of Science and Technology Policy, to continue cooperation across relevant government agencies and improve science-based regulatory approaches directed in 2015 by the White House memorandum to federal agencies, including: updating science-based regulations navigable by small and mid-sized innovators and promoting understanding of how a risk- and science based regulatory approach effectively protects consumers.
    c. **Expedite Commercialization of Biotechnology Products** – Create a forum led by the White House Office of Science and Technology Policy that connects regulators with the funding and R&D agencies to increase awareness and speed the safe commercialization of novel biotechnology products.

5. **Enable Rural Uses of Unmanned Technologies** – Federal regulations currently restrict many agricultural uses of unmanned aircraft systems (UAS). The FAA should expedite regulatory waiver approvals for low-altitude UAS operations in rural environments. State and local governments should be enabled to propose increased UAS operations in their jurisdictions to be considered by the FAA for streamlined regulatory waiver approvals. These could include rural communities seeking reduced restrictions on UAS operations for precision agriculture applications and improved production monitoring capacity.

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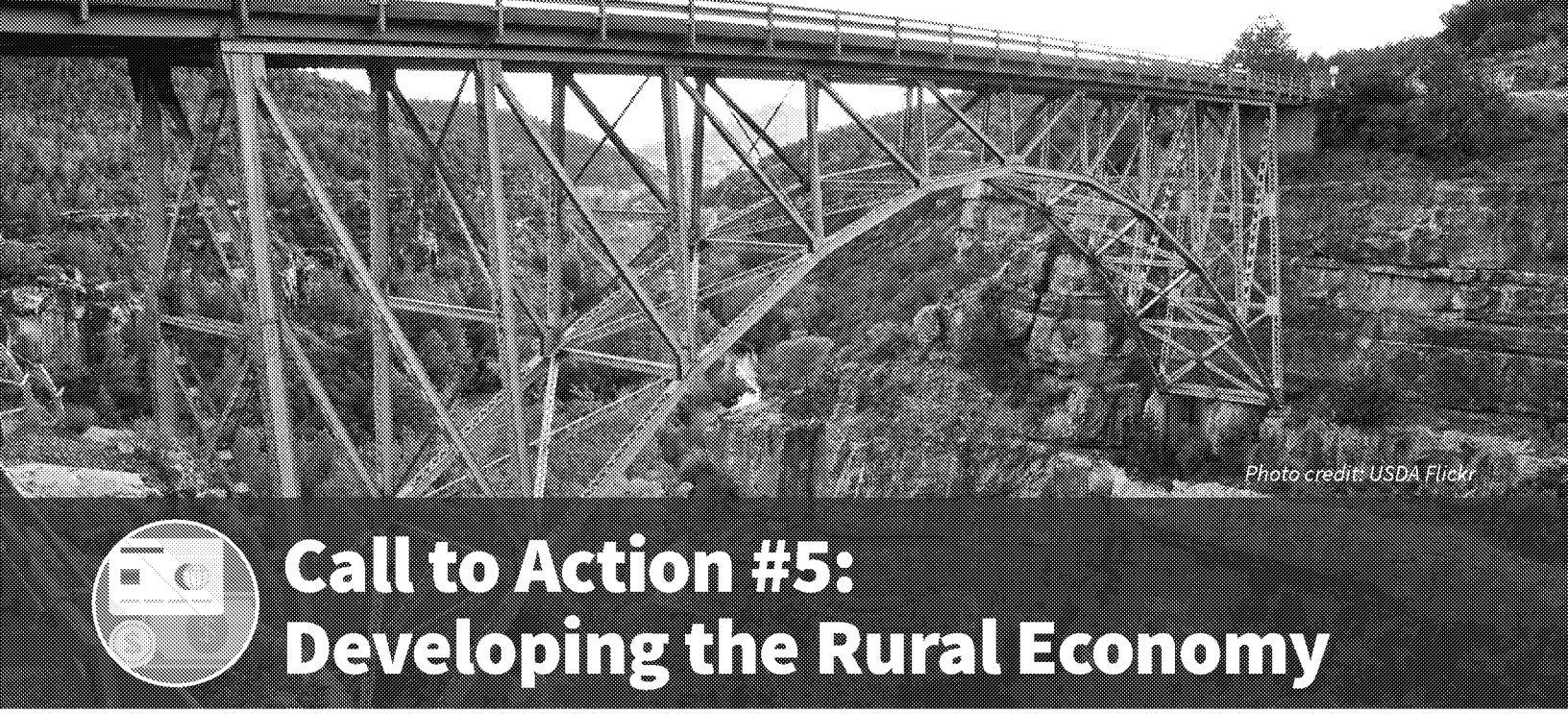
Photo credit: USDA Flickr

Call to Action #5: Developing the Rural Economy

Infusing rural areas with stronger businesses and agricultural economies empowers America. Expanding funding options to increase the productivity of farmers and ranchers will lead to the enhanced viability and competitiveness of rural America. By promoting innovative farm technologies, energy security, recreation, agritourism and sustainable forest management, communities will be empowered to leverage the bounties of rural America. Investing in rural transportation infrastructure is needed for carrying more "Made in America" products to markets at home and abroad, and boosting our country's global competitiveness. Reducing regulatory burdens and attracting private capital will support our ultimate mission of empowering Rural America to feed the world.

Economic development is enhanced by a supportive environment for business: an environment that encourages innovation and leverages existing resources. Rural areas have especially high concentrations of natural resource-related industries and manufacturing, providing considerable opportunity for meeting productivity goals. Additionally, the large number of baby boomers still to retire represents significant potential growth for many rural places. However, these opportunities may also introduce challenges. The steady decline in the employment shares of farming, mining, and manufacturing over the past half century is due in part to labor-saving productivity. Without substantial growth in the demand for these products, rapid productivity increases may further depress rural employment in these sectors. The challenge for rural economic development is to select strategies that encourage both expanding markets for existing products and exploring possibilities of new products that might require new types of jobs and skills.

Expanding markets through trade is one strategy for generating and sustaining economic growth. Programs and policies that promote overseas market development, such as assistance in understanding foreign market requirements and establishing networks, exist in many sectors and at both the federal and state level. More generally, U.S. and global trade are greatly affected by the growth and stability of world markets, including changes in world population, economic growth, and income. Other factors affecting trade are global supply conditions, changes in exchange rates, domestic support policies, and

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both tariff and non-tariff protections. Trade agreements generally increase trade, alter relative prices, and can change production systems and supply chains. Although increased access and support for export markets can be a growth opportunity for rural America, they can also increase competition from imports. However, the effects of trade may not be distributed evenly across regions or sectors. For example, some manufacturing industries are clustered in rural rather than urban areas. Food manufacturing, machinery manufacturing, and wood product manufacturing jobs account for larger shares of rural manufacturing jobs than urban manufacturing jobs, while computers, electronics, and chemical production account for larger shares of urban manufacturers.

In 2015, American farmers and ranchers relied upon exports for 19 percent of farm income, according to the Department of Agriculture. In 2016, their exports totaled over $139 billion, making the United States the world's top agricultural exporter. Export success supports livelihoods of many family farms around the country and helps to provide revenue to support schools, public services, small businesses, and millions of jobs for rural America that are outside agricultural industries.

Photo credit: Getty Images

Since the agri-food sector accounts for a larger share of nonmetro employment than of metro employment, growth in U.S. agricultural exports is of greater relative importance to the economic prosperity of nonmetro communities. In 2017, a report using a computable general equilibrium (CGE) model explored the economic effects of a hypothetical 10-percent increase in foreign demand for U.S. agricultural exports (Zahniser et al. 2017). This demand shift was found to result in a 6.7-percent increase in the volume of such exports, worth $9.7 billion at 2013 prices, and a net increase in total U.S. employment (all economic sectors) of about 41,500 jobs—above and beyond the nearly 1.1 million full-time civilian jobs that U.S. agricultural exports currently support. Some 40 percent of these new jobs would be created in rural (nonmetro) counties. The agri-food sector's share of regional employment is the main determinant of the percentage change in total regional employment in this simulation. Most parts of the agri-food sector (i.e., production agriculture plus food and beverage manufacturing) would see an increase in employment, while employment in other trade-exposed industries - most notably non-food-and-beverage manufacturing and mining - would decrease.

Growth in mining, especially shale gas and oil production, may also offer economic opportunities in rural areas, especially if energy prices rise. While shale gas and oil production has grown rapidly since 2005, growth in some production areas has slowed or reversed due in part to declining prices. However, other areas where production is still expanding may continue to experience rapid growth.

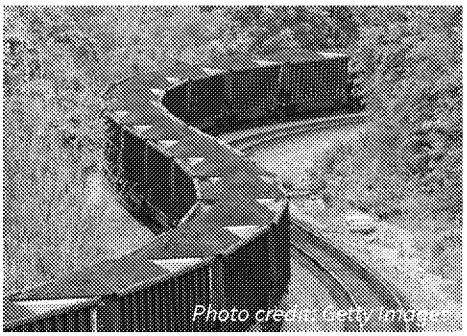
Photo credit: Getty Images

Movement of agriculture, mining, forestry, manufactured, and military freight would not be possible without transportation connectivity coast-to-coast, border-to-border, and between metropolitan areas. Rural America is home to many of the nation's most critical transportation infrastructure assets, including 444,000 bridges, 2.98 million miles of roadways, and 30,500 miles of Interstate highways, according to the Department of Transportation. More than half of all public road miles are locally-owned rural roads. Railroads moved 1.7 million tons of American freight in 2015. By 2045, the United States Department of Transportation projects total freight on all modes (rail, truck, air, water, pipeline) to reach 25 billion tons, valued at $37 trillion. The synergetic relationship between transportation investment and

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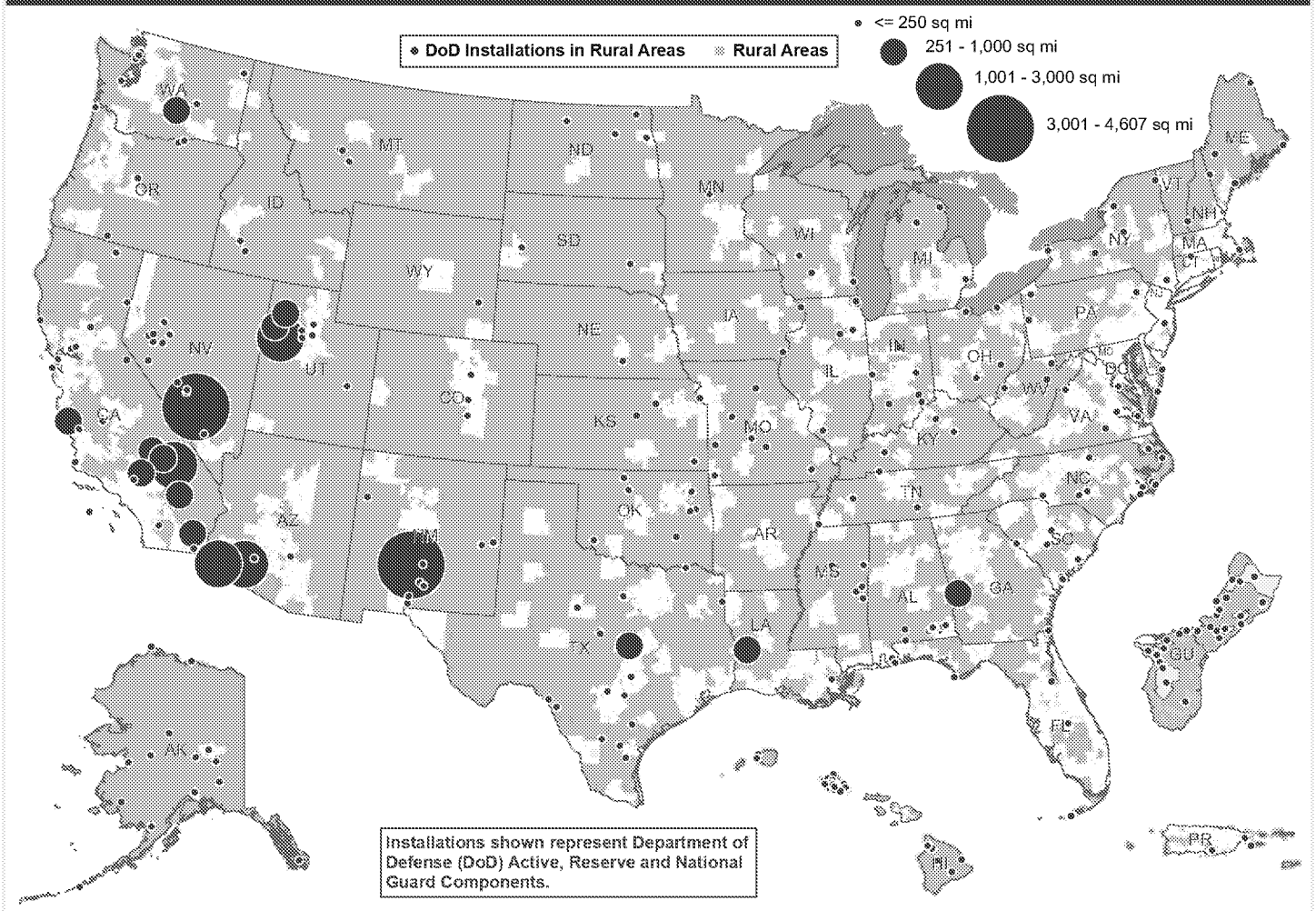
economic development is based on accessible intermodal connections and sufficient infrastructure capacity that can efficiently move freight and people. Transportation also has a broader role in shaping development patterns and impacting location decisions of businesses and people. Rural transportation accessibility and connectivity are critical to transportation-dependent business sectors in rural areas. The nation's rural transportation network provides the first and last link in the supply chain from farm to market, while supporting the tourism industry, enabling the production of energy, and supporting military movements.

Military installations and contract spending of the Department of Defense are other important economic drivers in many rural locations. Rural manufacturing facilities and vendors are buoyed by the Department, providing goods and services for our nation's military forces. According to the Department of Defense, almost half of all their service contract spending occurs in rural areas, to the tune of $5.4 billion dollars in Fiscal Year 2015. The opportunity to increase such an economic driver is substantial as the total rural share of all types of contract spending was only about $10 billion of the total $273 billion.

Department of Defense Installations in Rural Areas (337 total)



This map is shown at the National Scale. Defense installations that appear to be in Non-Rural Areas at the National Scale are included in Rural Areas when zoomed in to the County Level. Rural Areas are defined as US Counties in Non-Metropolitan Statistical Areas (MSAs) that also fall within US Census Tracks that have a Rural-Urban Commuting Area (RUCA) Code of 4-10. All data are current as of Fiscal Year 2015 and was acquired / processed from all DoD Components and the Washington Headquarters Services (WHS).

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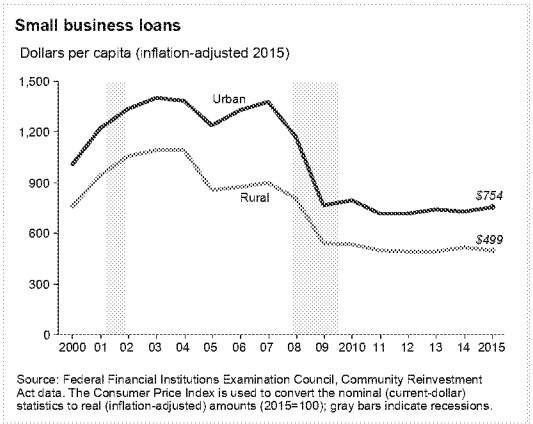
In addition to military installations supported by rural communities around the country, the Department of Defense, in cooperation with the states, maintains over 3,500 National Guard and Reserve centers mostly in rural areas to train military forces and maintain equipment. These centers also serve as local disaster relief and support centers for rural communities. Defense also relies on thousands of vendors and manufacturing facilities in rural areas to serve the defense industrial base by providing goods and services for our nation's military forces. Defense also has over 5,000 formerly used defense sites, mostly in rural areas, awaiting remediation that would allow for eventual economic redevelopment by local communities.

In Fiscal Year 2015, more than 42 percent of Active Duty enlisted personnel came from non-urban areas.[2] In addition, veterans are overrepresented in rural America by almost 20 percent and can provide valuable and needed skillsets. A huge opportunity exists for rural communities to reach these key populations. According to the American Community Survey, in total, the share of all post-9/11 veterans residing in rural areas in 2015 was 11.9 percent while the share of all pre-9/11 veterans residing in rural areas was 15.5 percent. Veterans are not evenly spread across the rural-urban landscape, either. Many areas with post-9/11 and combined veteran concentrations were near military installations, reserve centers, or training areas, where transitioning veterans are most likely to remain once they leave military service.

Access to capital to support investments in entrepreneurship, innovation, and growth may be more daunting in rural areas where fewer alternatives to conventional bank loans exist, relative to urban areas, which also have easier access to venture capital, angel investing, and emerging crowdsourcing models. Lending of all types to small businesses is consistently lower in rural areas compared to urban areas, and has yet to recover from the Great Recession of 2007-09. Because new, small firms are the major source of employment growth in both urban and rural economies, limited credit availability today may adversely affect near-term and long-term job growth. For example, recent research suggests that smaller, independent manufacturing plants had higher survival rates than larger plants and multi-unit plants, such as branch plants (Low 2017). Of course, there are two sides to the credit market and a decline in the demand for small business credit due to lower new business formation rates may be part of the explanation.



The healthcare sector also provides ample opportunities for rural economic development. For every job in a rural hospital, an additional 0.34 jobs are created in other businesses in the local economy. For every dollar in salary and benefits a rural hospital pays staff, an additional 19 cents in secondary wages and benefits is generated in the local economy (Doeksen et al., 2016). As of September 2017, 60 percent of Health Professional Shortage Areas, as identified by the Department of Health & Human Services, are in rural America and encompass 22.2 million rural residents.

2 Non-urban areas defined as Town & Rural segments. These areas contain households that are classified with one of those two urbanicity classifications. The population density scores where they are found range from 0 to 40. This category includes exurbs, towns, farming communities, and a wide range of other rural areas. The town aspect of this class covers the thousands of small towns and villages scattered throughout the rural heartland, as well as the low-density areas far beyond the outer beltways and suburban rings of America's major metros. Households in the exurban segments have slightly higher densities and are more affluent than their rural neighbors. DoD Population Representation report 2015 (https://www.cna.org/research/pop-rep) page 125.

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Overall, identifying key regulatory reforms, streamlining processes, and improving interagency coordination is required to create conditions in which the rural economy can thrive. For example, the cost of providing or restoring clean water for a community of only a few hundred citizens can be upwards of hundreds of thousands to millions of dollars. Without the financial assistance of the federal government, these projects would be impossible to afford. While federal agencies can often provide most of the funding necessary, either in the form of loans or grants, communities must still provide some portion of the financing. In addition to the cost of the construction, communities must also be able to afford to get their projects through the approval process. Even for small projects, the complexity of the environmental review process alone, requiring the coordination of various state and federal agencies and the services of a professional environmental consulting firm, can cost more than $20,000. While that may be affordable for a city, for a small rural community this extra cost can be a deal-breaker. That means for some communities, residents must go without even the most basic of public services.

Objectives & Recommended Actions

1. **Access to Capital** – Rural business men and women, entrepreneurs, as well as beginning farmers and ranchers, often have difficulty accessing capital to help them start, grow, and expand their businesses. They are often either too large or too small to qualify for, or gain access to, available loans and lending programs. In addition, Wall Street and Silicon Valley have struggled to access rural markets which are therefore not primed to take their cash. Agricultural lenders tend to operate far differently than venture capital firms and global private investors. With the number of small and community banks declining, we need to help communities identify and develop projects appropriate for private investment. The Task Force recommends that future strategies include:

    a. **Equity Financing** – Allowing new obligations in federal and state loan and credit programs to be used to meet equity requirements, or a first-loss-position, could help rural communities bring additional financing to the table.
    b. **Debt Financing** – With renewed focus and goals for agricultural and non-agricultural lending in rural counties by both the Department of Agriculture and Small Business Administration (SBA), SBA is able to provide loans up to $5.5 million.
    c. **Bundle/Repackage Projects and Deals** – A legal/finance vehicle to bundle projects can bring the necessary scale to attract private sector interest and take advantage of economies of scale to deliver cost savings.
    d. **Regional and State Collaboration** – Projects can draw upon larger revenue streams when approached regionally. There are more financing options and deeper expertise when state wide and regional entities are involved.

2. **Leverage Existing Market Opportunities** – Larger and more strategic public-private sector opportunities should be sought for rural America. Locally-transformative actions create jobs and lift up local economies. Many of these opportunities languish in regulatory uncertainty, or struggle with volatile economic risk profiles. Among the expertise within the federal family, lies the opportunity to make a big difference in the lives of rural families, farmers and ranchers. We should engage the private financial sector and work to identify opportunities already in their pipeline. The federal government could provide guidance to find ways to help capital markets expedite deal execution that quickly benefit rural economies.

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3. **Create a Rural Prosperity Investment Portal** – A web based portal enabling rural based investment partnerships – public or private – will serve as a matchmaking tool for project promoters to reach domestic and international investors. The portal can mobilize investments, promote economic growth and create more jobs across rural America. In partnership with the Opportunity Project, the proposed Commission on Agriculture and Rural Prosperity should coordinate with the Department of Commerce and the Department of Agriculture to engage the tech sector through the creation of digital tools that expand rural prosperity, such as an investment portal. The Opportunity Project involves collaboration across government agencies, local governments, tech companies, community organizations, and more, to create new digital solutions that help families, businesses, local officials, and other members of the public access economic opportunity. To date, over 45 digital tools have been created by tech companies through the Opportunity Project.

4. **Build a Better Tax Code** – Rural Americans who work hard every day to provide food, fiber, fuel, manufactured goods, and services for their fellow citizens shouldn't be overburdened by the tax collector. Reforms to federal tax policy are long overdue. Most family farms and rural entrepreneurs operate as small businesses, where the line between success and failure is razor thin. Add to that the complexity and costs of merely complying with the tax code, and their budgets are stretched even tighter. The federal government should build a better tax code to encourage investment, create jobs and help Americans keep more of their hard-earned money.

5. **Increase Agricultural, Forestry and Food Production** – With world food demand expected to double in 40 years, leadership is necessary to meet this economic opportunity and humanitarian imperative. Keeping future generations on the farm is one of the best ways to ensure that the demand for food, fiber, and energy production is met. Family-run operations provide economic and social continuity to their communities across generations, so federal policies should encourage their transfer to family members willing to remain on the farm. For example, key community stakeholders, including grocery stores, distributors, value-chain actors, universities, and more, will soon be able to engage and franchise a community economic development model as well as share success stories. In addition, local, regional, and state leaders will be convened to engage in a discussion on effective methods of economic development and coordination with federal investment as well as to discuss how federal, regional, state and local incentives and regulations can support and/or hinder agriculture in their area. This coordination will result in"Agricultural Community Economic Development" model tool kits being developed and deployed for the Department of Agriculture, rural partners, and farmers.

6. **Remove Regulatory Barriers to Developing and Accessing Natural Resources** – Rural communities are often rich in natural and renewable natural resources, energy sources, and minerals. These communities should be able to responsibly and sustainably access, use, and profit from those local assets without undue federal restrictions and intervention. The Task Force recommends that the following actions be initiated within the federal government: improve interagency coordination to reduce process burden through environmental analysis and decision-making efficiencies; streamline consultation processes using standard decision-making templates and implementing regulatory changes; integrate digital service systems to improve customer service, and reduce delivery of services; develop and test the issuance of permits electronically (e-Permitting); and, develop and implement a modernized 'special use' permitting system, including a web-based ePermit system that offers

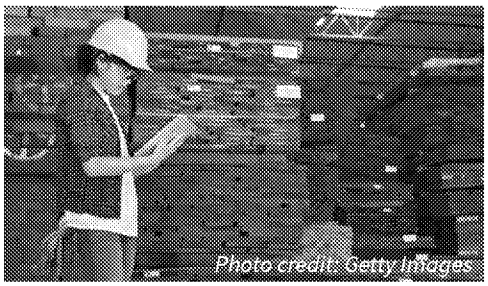
Photo credit: Getty Images

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convenience and a high-quality user experience to the public. Components of this system are already taking shape between the Department of Agriculture and Department of Interior.

7. **Regain American Energy Dominance** – Rural America is a source of resources that can fuel the nation and the world. Boosting production of all sources of energy from natural gas, oil, coal, nuclear, and renewables is essential to America's national security interest and rural America's economy. The federal government must ensure a regulatory environment which can unleash this potential while keeping Americans safe and healthy. This increase in production of domestic fuels will bring jobs back to rural America and promote energy security. We must also continue research and development for new sources of energy to ensure that America leads the world in innovative energy sources. Overall, this boost in energy production will benefit rural communities, boost U.S. tax revenues, and increase our power in the global energy market.

Photo credit: Getty Images

8. **Rebuild and Modernize Rural America's Infrastructure** – The economic success of future generations and rural communities depends on rehabilitating transportation infrastructure, closing the infrastructure gaps within rural communities, and enhancing connection to metropolitan areas.

    a. **Increase "Made in America" Outputs** – Increasing "Made in America" output in agriculture, manufacturing, forestry, and mining requires investment in capacity and modernization of rural infrastructure to connect rural production facilities and businesses to nationwide and global commerce. Increased output will result in unleashing the full potential of the U.S. economy and the creation of rural job opportunities, ensuring that rural areas are attractive and prosperous places to live for generations to come.
    b. **Address Commercial Infrastructure Gaps** – The key infrastructure gaps that need to be addressed are those that carry commerce for rural America, especially in the first and last mile. Transportation infrastructure of all modes – roads, bridges, railways, and waterways – must be upgraded and expanded with the capacity needed to accommodate the additional crops and products that are made in America's rural economies, including food, fiber, forests, and factory-made commodities and specialty-goods.
    c. **Develop the "Digital Superhighway"** – The "digital superhighway" for connectivity must be built out to support rural economies' connection to all applications of global commerce, including support of data transfer needed for the Internet of Things and future deployment of autonomous vehicles. In the short term, better collaboration among the Department of Transportation, Department of Agriculture, Army Corps of Engineers, Department of Energy, and others will enable the strategic rehabilitation and build-out of the infrastructure needed to carry freight to, within, and from rural production sites in today's and tomorrow's economy.
    d. **Expand State and Local Transportation Capacity** – Empowerment of state and local governments to expand and maintain infrastructure will ensure rural transportation capacity supports local and regional demands for freight flow.

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9. **Cutting Red Tape** – To ensure the quickest and most effective deployment of new investments in infrastructure, federal environmental permitting must be simpler and speedier. Regulatory reforms, streamlining processes, and improving interagency coordination must occur to create conditions in which the rural economy can thrive from the farm gate and small business up through the value-added chain. Our federal actions must also be as customer-centric as possible and we must ensure that our regulations and policies are up-to-date, necessary, and effectively achieving their purposes, while simultaneously being as affordable and consistent as possible. If inconsistencies or interferences with reform initiatives, or actions that eliminate jobs or inhibit job creation are identified, we must take steps to lessen or remove their negative impacts. One such action that can be taken in the short term is to fully implement One Federal Decision (OFD) and FAST-41 policies and recommendations within environmental authorization actions. All federal agencies should actively participate in all FAST-41 and OFD working groups to ensure that any lessons learned are applied to improve environmental authorization processes.

10. **Increase Access to Global Market** – Based on fair trade principles, international market access must be aggressively pursued and supported. Physical infrastructure and e-connectivity must be improved and maintained to connect farms and rural communities to the world. American agriculture needs and deserves policies that support and build on this success - by opening markets abroad; by ensuring fair and science-based regulatory treatment for American products of all kinds; and by implementing strong enforcement policies that hold trading partners to their commitments. In the next three years, our administration will take on challenges ranging from high tariffs on dozens of products – including meats, dairy, rice, soy, wheat, fresh fruit and vegetables, and more – to unscientific regulation of biotechnology products and other goods; inappropriate use of geographical indications in ways that shut out American producers of wines, cheeses, and other high-value products; and escalating levels of domestic supports in large emerging economies. We will address these through fair negotiations, use of World Trade Organization and Free Trade Agreement dispute settlement rights, and all other means at our disposal.

Photo credit: USDA Flickr

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Message

From: Sands, Jeffrey [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B2AA28629ADE4AFB8D5EC12A8AAABA54-SANDS, JEFF]
Sent: 11/15/2017 12:37:24 AM
To: Ford, Hayley [ford.hayley@epa.gov]
CC: Dravis, Samantha [dravis.samantha@epa.gov]; Gunasekara, Mandy [Gunasekara.Mandy@epa.gov]; Bennett, Tate [Bennett.Tate@epa.gov]; Hupp, Millan [hupp.millan@epa.gov]
Subject: Re: Meeting Request- National Corn Growers Association President

I can do that. Thanks!!

Sent from my iPhone

On Nov 14, 2017, at 6:11 PM, Ford, Hayley <ford.hayley@epa.gov> wrote:

> Jeff – Do you want to respond directly to Colleen below and let her know that as the Administrator's Ag Advisor, you would be more than happy to meet with Kevin? Then you can let this group know when it's happening and if they should sit in.
>
> Thanks!
>
> *Hayley Ford*
> Deputy White House Liaison and Personal Aide to the Administrator
> Environmental Protection Agency
> ford.hayley@epa.gov
> Phone: 202-564-2022
> Cell: Ex. 6
>
> ---
>
> **From:** Sands, Jeffrey
> **Sent:** Tuesday, November 14, 2017 6:01 PM
> **To:** Ford, Hayley <ford.hayley@epa.gov>; Dravis, Samantha <dravis.samantha@epa.gov>; Gunasekara, Mandy <Gunasekara.Mandy@epa.gov>; Bennett, Tate <Bennett.Tate@epa.gov>
> **Cc:** Hupp, Millan <hupp.millan@epa.gov>
> **Subject:** RE: Meeting Request- National Corn Growers Association President
>
> Thanks Haley.
>
> Ex. 5 Deliberative Process (DP) I can meet with Kevin, NCGA, and would welcome anyone from this team to join.
>
> ---
>
> **From:** Ford, Hayley
> **Sent:** Tuesday, November 14, 2017 3:20 PM
> **To:** Dravis, Samantha <dravis.samantha@epa.gov>; Gunasekara, Mandy <Gunasekara.Mandy@epa.gov>; Sands, Jeffrey <sands.jeffrey@epa.gov>; Bennett, Tate <Bennett.Tate@epa.gov>
> **Cc:** Hupp, Millan <hupp.millan@epa.gov>
> **Subject:** FW: Meeting Request- National Corn Growers Association President
>
> Ex. 5 Deliberative Process (DP)

Let me know your thoughts. Thanks!

Hayley Ford
Deputy White House Liaison and Personal Aide to the Administrator
Environmental Protection Agency
ford.hayley@epa.gov
Phone: 202-564-2022
Cell: Ex. 6

From: Colleen Willard [mailto:willard@ncga.com]
Sent: Thursday, November 09, 2017 2:12 PM
To: Pruitt, Scott <Pruitt.Scott@epa.gov>
Subject: Meeting Request- National Corn Growers Association President

Good afternoon!

I am hoping to schedule a meeting for National Corn Growers Association President, Mr. Kevin Skunes, and Administrator Pruitt. Mr. Skunes is available after 10:00 am on December 7th and before noon on December 8th. Administrator Pruitt has indicated to Mr. Skunes his desire to meet, so please let me know if there is an agreeable date/time.

Best,
Colleen

Colleen M. Willard
Director, Public Policy
National Corn Growers Association
20 F Street NW, Suite 600
Ex. 6 Direct
willard@ncga.com

The information in this email, and any attachments, is intended by the National Corn Growers Association for the use of the named individual or entity to which it is addressed and may contain information that is privileged, proprietary, copyrighted, trademarked, etc. or otherwise confidential. It is not intended for transmission to, or receipt by, any individual or entity other than the named addressee (or a person authorized to deliver it to the named addressee), except as otherwise expressly permitted in this electronic mail transmission. If you have received this communication in error, please delete it without copying or forwarding it, and notify the sender of the error by reply email.

Message

From: Sands, Jeffrey [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B2AA28629ADE4AFB8D5EC12A8AAABA54-SANDS, JEFF]
Sent: 2/15/2018 2:51:48 PM
To: Subramanian, Hema [Subramanian.Hema@epa.gov]
Subject: Documents to Print
Attachments: BPPD Biotech bullets for the Administrator 2 9 2018.docx; Biotechnology Briefing 2.15.18.docx

2 copies of the 1st attachment, 1 copy of 2nd please.

Thank you.

Jeffrey Sands
Senior Advisor to the Administrator for Agriculture
1200 Pennsylvania Ave, NW
2415 WJC North
Washington, DC 20460
(202) 564-2263

Message

From: Sands, Jeffrey [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B2AA28629ADE4AFB8D5EC12A8AAABA54-SANDS, JEFF]
Sent: 2/14/2018 7:52:18 PM
To: Ferguson, Lincoln [ferguson.lincoln@epa.gov]; McMurray, Forrest [mcmurray.forrest@epa.gov]
CC: Beck, Nancy [beck.nancy@epa.gov]
Subject: Briefing Document 2/15/18
Attachments: Biotechnology Briefing 2.15.18.docx

Gentlemen,

Attached you will find a briefing document to support our 10:30am conversation with the Administrator.

Thank you very much.

Jeffrey Sands
Senior Advisor to the Administrator for Agriculture
1200 Pennsylvania Ave, NW
2415 WJC North
Washington, DC 20460
(202) 564-2263

Message

From: Sands, Jeffrey [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B2AA28629ADE4AFB8D5EC12A8AAABA54-SANDS, JEFF]
Sent: 11/14/2017 11:01:20 PM
To: Ford, Hayley [ford.hayley@epa.gov]; Dravis, Samantha [dravis.samantha@epa.gov]; Gunasekara, Mandy [Gunasekara.Mandy@epa.gov]; Bennett, Tate [Bennett.Tate@epa.gov]
CC: Hupp, Millan [hupp.millan@epa.gov]
Subject: RE: Meeting Request- National Corn Growers Association President

Thanks Haley.

Ex. 5 Deliberative Process (DP) I can meet with Kevin, NCGA, and would welcome anyone from this team to join.

From: Ford, Hayley
Sent: Tuesday, November 14, 2017 3:20 PM
To: Dravis, Samantha <dravis.samantha@epa.gov>; Gunasekara, Mandy <Gunasekara.Mandy@epa.gov>; Sands, Jeffrey <sands.jeffrey@epa.gov>; Bennett, Tate <Bennett.Tate@epa.gov>
Cc: Hupp, Millan <hupp.millan@epa.gov>
Subject: FW: Meeting Request- National Corn Growers Association President

Ex. 5 Deliberative Process (DP)

Let me know your thoughts. Thanks!

Hayley Ford
Deputy White House Liaison and Personal Aide to the Administrator
Environmental Protection Agency
ford.hayley@epa.gov
Phone: 202-564-2022
Cell: Ex. 6

From: Colleen Willard [mailto:willard@ncga.com]
Sent: Thursday, November 09, 2017 2:12 PM
To: Pruitt, Scott <Pruitt.Scott@epa.gov>
Subject: Meeting Request- National Corn Growers Association President

Good afternoon!

I am hoping to schedule a meeting for National Corn Growers Association President, Mr. Kevin Skunes, and Administrator Pruitt. Mr. Skunes is available after 10:00 am on December 7th and before noon on December 8th. Administrator Pruitt has indicated to Mr. Skunes his desire to meet, so please let me know if there is an agreeable date/time.

Best,
Colleen

Colleen M. Willard
Director, Public Policy

National Corn Growers Association
20 F Street NW, Suite 600
Ex. 6 Direct
willard@ncga.com

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Message

From: Sands, Jeffrey [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B2AA28629ADE4AFB8D5EC12A8AAABA54-SANDS, JEFF]
Sent: 2/14/2018 7:23:53 PM
To: Beck, Nancy [beck.nancy@epa.gov]
Subject: RE: Talking Points
Attachments: BPPD Biotech bullets for the Administrator 2 9 2018.docx; Biotechnology Briefing 2.15.18.docx

---

From: Beck, Nancy
Sent: Wednesday, February 14, 2018 2:22 PM
To: Sands, Jeffrey <sands.jeffrey@epa.gov>
Subject: Re: Talking Points

Thanks. Can you send me a copy to look at before the meeting?

Nancy B. Beck, Ph.D., DABT
Deputy Assistant Administrator, OCSPP
P: 202-564-1273
M: Ex. 6
Beck.Nancy@epa.gov

On Feb 14, 2018, at 2:11 PM, Sands, Jeffrey <sands.jeffrey@epa.gov> wrote:

> Nancy,
>
> Thanks much to you and your team for your work on the briefing document. I have made some slight modifications to ensure that the information fits on one page. Simply, I deleted the additional background information at the end of the document.
>
> I bring two copies of the original document for us and provide Lincoln with the abridged version here shortly.
>
> See you tomorrow morning.
>
> Best,
>
> Jeffrey Sands
> Senior Advisor to the Administrator for Agriculture
> 1200 Pennsylvania Ave, NW
> 2415 WJC North
> Washington, DC 20460
> (202) 564-2263

Message

From: Sands, Jeffrey [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B2AA28629ADE4AFB8D5EC12A8AAABA54-SANDS, JEFF]
Sent: 1/19/2018 5:13:50 PM
To: Joe Hodes [Hodes@ncga.com]
Subject: RE: Available to meet with our Advanced Leadership class Jan 30-Feb 1?

Hi Joe,

I appreciate you reaching out. Due to ethics obligations, I am recused from from meeting with Syngenta or participating in meetings/events that are sponsored or hosted by the company. I apologize for any inconvenience but I will not be able to join the group due to those factors.

Best wishes for a successful meeting.

Jeff

From: Joe Hodes [mailto:Hodes@ncga.com]
Sent: Thursday, January 18, 2018 6:14 PM
To: Sands, Jeffrey <sands.jeffrey@epa.gov>
Subject: Available to meet with our Advanced Leadership class Jan 30-Feb 1?

Dear Jeff,

I hope you are doing well! Congrats on the "new" position with EPA. Greatly appreciate your willingness to take the plunge and work for the administration.

Would you be interested in speaking with the Advanced Leadership class during their January 29—February 1 time in DC? You'll recall that the Syngenta-sponsored Advanced Leadership class is composed of NCGA Leadership At Its Best grads who are seeking additional training as they take on more senior state and national leadership roles (the national board, chairs of our action teams and committees, etc.). The class is in town Monday to Thursday (Monday is taken up with NCGA lobbyist briefings and media training) and has lots of open spots in their schedule: Tuesday morning, all day Wednesday, and Thursday morning.

I think the class would immensely benefit from your insights on:

- The EPA's ag vision under the new administration;
- Your experience shifting from industry lobbyist to advisor at a federal regulatory agency; and,
- Your experience joining the Trump Administration (especially in the face of all the negative press).

We'd be happy to host you at our hotel (Washington Court), the NCGA DC office around the corner, or would happily come to you.

Let me know if this is something you'd be willing to pursue as I think it would be a very beneficial experience for the class.

Many thanks!

Joe Hodes

Joe Hodes

Director of Development
National Corn Growers Association
hodes@ncga.com
636-733-9004 x Ex. 6
636-733-9005 (fax)
Ex. 6 cell)
Tell Congress to Support MAP and FMD Funding

The information in this email, and any attachments, is intended by the National Corn Growers Association for the use of the named individual or entity to which it is addressed and may contain information that is privileged, proprietary, copyrighted, trademarked, etc. or otherwise confidential. It is not intended for transmission to, or receipt by, any individual or entity other than the named addressee (or a person authorized to deliver it to the named addressee), except as otherwise expressly permitted in this electronic mail transmission. If you have received this communication in error, please delete it without copying or forwarding it, and notify the sender of the error by reply email.

Message

From: Sands, Jeffrey [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B2AA28629ADE4AFB8D5EC12A8AAABA54-SANDS, JEFF]
Sent: 11/13/2017 10:53:58 PM
To: Subramanian, Hema [Subramanian.Hema@epa.gov]
Subject: FW: MS Issues/ Background Memo
Attachments: Mississippi Travel October 12.docx; TateMS Hot Issues_October 2017.docx

FYI....

From: Bennett, Tate
Sent: Monday, November 13, 2017 10:50 AM
To: Sands, Jeffrey <sands.jeffrey@epa.gov>
Subject: FW: MS Issues/ Background Memo

From: Bennett, Tate
Sent: Wednesday, October 11, 2017 4:27 PM
To: Ferguson, Lincoln <ferguson.lincoln@epa.gov>
Cc: Jackson, Ryan <jackson.ryan@epa.gov>; Letendre, Daisy <letendre.daisy@epa.gov>; Hupp, Millan <hupp.millan@epa.gov>; McMurray, Forrest <mcmurray.forrest@epa.gov>; Gordon, Stephen <gordon.stephen@epa.gov>; Glenn, Trey <Glenn.Trey@epa.gov>
Subject: MS Issues/ Background Memo

All- Lincoln has placed the attached materials in his binder. Trey Glenn will be in attendance as well. Thanks!

TO: Administrator Pruitt
FROM: OPE
CC: Ryan Jackson
RE: Mississippi Day
DATE: October 12, 2017
LOCATION: Mississippi
ATTIRE: Business

NOTABLE BIOS

Bios

Gov. Phil Bryant

Phil Bryant was sworn in as governor of Mississippi on January 10, 2012. The son of a diesel mechanic, Bryant was born in Moorhead, Mississippi, and raised in Sunflower County in the Delta region. He earned undergraduate degrees from Hinds Community College and the University of Southern Mississippi and a master's degree from Mississippi College, where he has taught Mississippi political history.

EVENT 1, Capitol Tour, 400 High Street, Jackson, MS 39201, Governor Phil Bryant (8:15-8:45am CST)

Format: Administrator Pruitt and Governor Bryant meet at Capitol for tour and picture in the Governor's Ceremonial Office, 3rd floor.

Notable Attendees: Gov. Phil Bryant

Host: Gov. Phil Bryant

Background: Capitol Tour

EVENT 2, Governor's Mansion, 300 E. Capitol St. Jackson, MS 39201 (9:00-10:30am CST)

Format: Group Discussion about Waters of the U.S. Rule

Bio's:

Cindy Hyde-Smith is the Mississippi Commissioner of Agriculture and Commerce. She took office in January 2012 and is the first woman to hold the position. Prior to serving as Agriculture Commissioner, Hyde-Smith was a member of the Mississippi Senate for three terms, holding the position of Senate Agriculture Committee chair for eight years.

Mike McCormick was elected President of the Mississippi Farm Bureau Federation on December 8, 2014. He is a cow/calf and timber farmer from Union Church in Jefferson County,

Mississippi. He operates one of the oldest farms in Mississippi which has been in his family since the 1820s.

Attendee List:

1. Cindy Hyde-Smith, Commissioner of Agriculture
2. Mike McCormick, President, Mississippi Farm Bureau
3. Teresa Love, Office of Senator Roger Wicker
4. Jimmy Bullock, Senior Vice President, Forest Sustainability, Resource Management Service, LLC (RMS) – Representing Mississippi Forestry Association
5. Derrick Surrette, Executive Director, Mississippi Association of Supervisors
6. Andy Berry, Executive Vice President, Mississippi Cattlemen's Association
7. Mark Leggett, President, Mississippi Poultry Association
8. *Chip Morgan, Executive Vice President, Delta Council
9. **Trey Cooke, Executive Director, Mississippi F.A.R.M.
10. **Dan Branton, Delta F.A.R.M. Chairman and landowner/operator in Washington County
11. Jimmy Palmer, Attorney, Yazoo Management District (Note: Palmer is a former EPA Region IV Administrator under President George W. Bush.)
12. Gary Rikard, Executive Director, Mississippi Department of Environmental Quality
13. Jack Winstead, Chairman, Commission on Environmental Quality and Advisor to Ag Commissioner Hyde-Smith
14. Brenda Lathan, Commission on Environmental Quality
15. Jamie Martin, Commission on Environmental Quality*
16. Billy Van Devender, Commission on Environmental Quality (He is a timber grower)
17. Chat Phillips, Commission on Environmental Quality (He is a farmer.)
18. John Campbell, Chief of Staff, Department of Agriculture and Commerce
19. Andy Whittington, Environmental Coordinator, Mississippi Farm Bureau
20. Justin Ferguson, National Affairs Coordinator, Public Policy Coordinator, Mississippi Farm Bureau
21. Don Underwood, Soil and Water Conservation Service
22. Pete Hunter, Soil and Water Conservation Service Commissioner
23. Kurt Readus, US Natural Resource Conservation Service
24. Bill Kitchings, Mississippi Forestry Commission

Host: Gov. Phil Bryant

EVENT 3. Bolton, MS: Ted Kendall Farm Visit, The Gaddis Farms Lake House 2180 Queens Hill Road Bolton, MS 39041 (11:00-11:30am CST)

Format: Address to 300 farmers from over 20 different counties. Short Q&A to follow.

Host: Ted Kendall

Background: Ted Kendall is a 5th generation farmer who raises beef cattle, cotton, corn, and soybeans, and timber on his farm in Bolton. He currently serves as Vice-President (Central

Mississippi) of the Mississippi Farm Bureau) and recently completed a term serving on the Commission on Environmental Quality, which is appointed by the Governor.

Format: Ted Kendall welcomes people to Gaddis Farm & Introduces Governor Bryant. Governor introduces Administrator Pruitt.

Administrator makes brief remarks, followed by Q&A

Attendee List:

1. *Cindy Hyde-Smith, Commissioner of Agriculture
2. *Mike McCormick, President, Mississippi Farm Bureau (farmer)
3. *Teresa Love, Office of Senator Roger Wicker
4. Donald Gant, Vice President North, Mississippi Farm Bureau (farmer)
5. Reggie Magee, Vice President South, Mississippi Farm Bureau (farmer)
6. *Andy Berry, Executive Vice President, Mississippi Cattlemen's Association
7. *Mark Leggett, President, Mississippi Poultry Association
8. *Trey Cooke, Executive Director, Mississippi F.A.R.M.
9. Dan Branton, Delta F.A.R.M. Chairman and landowner/operator in Washington County
10. Rob Coker, farmer and former Chair of Delta F.A.R.M.
11. *Derrick Surrette, Executive Director, Mississippi Association of Supervisors
12. *Jimmy Bullock, Senior Vice President, Forest Sustainability, Resource Management, LLC (RMS) – Representing Mississippi Forestry Association
13. * Jimmy Palmer, Attorney, Yazoo Management District
14. *Don Underwood, Soil and Water Conservation Service
15. *Pete Hunter, Soil and Water Conservation Service Commission
16. * Kurt Readus, US Natural Resource Conservation Service
17. *Bill Kitchings, Mississippi Forestry Commission
18. *Jack Winstead, Commission on Environmental Quality and Advisor to Ag Commissioner Hyde-Smith (Retired State Soil Conservationist)
19. *Chat Phillips, Environmental Commission Member and farmer in Yazoo County
20. *Brenda Lathan, Commission on Environmental Quality
21. *Jamie Martin, Commission on Environmental Quality
22. *Gary Rikard, Executive Director, Mississippi Department of Environmental Quality
23. *John Campbell, Chief of Staff, Department of Agriculture and Commerce
24. *Andy Whittington, Environmental Coordinator, Mississippi Farm Bureau
25. *Justin Ferguson, National Affairs Coordinator, Public Policy Coordinator, Mississippi Farm Bureau
26. Lee Thorne, Public Policy Coordinator/Deputy General Counsel, Mississippi Farm Bureau
27. Andy Prosser, Simmons Catfish (catfish farmer and row crop producer)
28. Tony Thames, cattle farmer and president of Mississippi Cattlemen's Association
29. Dr. Nancy Jackson, cattle farmer and veterinarian from Eupora, Mississippi
30. Joe Hancock, cattle farmer and Mayor of Mize, Mississippi
31. Matthew King, cattle farmer from Webster County

EVENT 4. Jackson, MS : Lunch, • The Manship Wood Fired Kitchen, 1200 N State Street, Ste 100 Jackson, MS 39202

Format: Lunch

Attendee List:

1. Governor Phil Bryant
2. Joey Songy, Chief of Staff
3. Administrator Scott Pruitt
4. Lincoln Ferguson, Aide
5. Lee Lampton, Ergon
6. Glenn McCullough, ED of MS Development Authority (MDA)
7. Mike McGrevey, Deputy of MDA
8. Bill Yates (or Kirk Sims), The Yates Companies
9. Steve Marsh, VP of Manufacturing of Nissan
10. Jim Richards, President and CEO of KLLM
11. Robert Taylor, The Taylor Company
12. Akitoshi Ichino, President of Toyota
13. Sean Suggs, VP of Toyota
14. Warren Hood, CEO of Hood Industries
15. Mayo Flynt, President of AT&T Mississippi
16. Trey Glenn, Regional EPA Administrator

Message

From: Sands, Jeffrey [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B2AA28629ADE4AFB8D5EC12A8AAABA54-SANDS, JEFF]
Sent: 12/8/2017 6:00:29 PM
To: Carolyn Orr [corr@agandruralleaders.org]
Subject: RE: picture, bio
Attachments: Jeff Sands BIO.DOCX

Hi Dr. Orr,

Attached please find a BIO. I am still working on the photo.

Thanks for your consideration.

Best,
Jeff

From: Carolyn Orr [mailto:corr@agandruralleaders.org]
Sent: Wednesday, December 6, 2017 6:42 PM
To: Sands, Jeffrey <sands.jeffrey@epa.gov>
Subject: picture, bio

Jeff, can you send me a picture and bio please?

Carolyn Orr Ph.D., P.A.S.
State Agriculture and Rural Leaders
& Council of State Governments - Midwest
corr@sarl.us
cell Ex. 6
"Agriculture is our wisest pursuit, because it will in the end contribute most to real wealth, good morals, and happiness."
Thomas Jefferson

Jeff Sands is the Senior Advisor to the Administrator for Agriculture at the Environmental Protection Agency. Jeff comes to EPA most recently from Syngenta, where he served as Manager of Federal Government and Industry Relations. Before working at Syngenta, Sands was director of public policy for the Agricultural Retailers Association from 2012 to 2015. Jeff also has Capitol Hill experience, having helped handle agricultural issues as an aide to Rep. Tom Marino (R-Pa.).

Sands has a master's degree in public administration as well as a bachelor's degree in organizational communication from Valdosta State University. He also has a degree in environmental horticulture from Abraham Baldwin Agricultural College.

Message

From: Sands, Jeffrey [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B2AA28629ADE4AFB8D5EC12A8AAABA54-SANDS, JEFF]
Sent: 2/13/2018 2:30:22 PM
To: Bahadori, Tina [Bahadori.Tina@epa.gov]
CC: Thayer, Kris [thayer.kris@epa.gov]; Lavoie, Emma [Lavoie.Emma@epa.gov]; Cogliano, Vincent [cogliano.vincent@epa.gov]; Subramanian, Hema [Subramanian.Hema@epa.gov]
Subject: RE: Ag connections -- ammonia risk assessment

Hi Tina,

I hope this note finds you well. I appreciate you reaching out and offering to brief the office on your latest efforts regarding ammonia. Hema (Special Assistant in the Ag Advisor's office) and I would love to have the opportunity to learn more. If you and your team could work with her in setting up a time, I would be grateful.

Thanks very much!!

Best,
Jeff

From: Bahadori, Tina
Sent: Tuesday, February 6, 2018 10:57 AM
To: Sands, Jeffrey <sands.jeffrey@epa.gov>
Cc: Thayer, Kris <thayer.kris@epa.gov>; Lavoie, Emma <Lavoie.Emma@epa.gov>; Cogliano, Vincent <cogliano.vincent@epa.gov>
Subject: Ag connections -- ammonia risk assessment

Good morning Jeff,
My name is Tina Bahadori and I am the Director of the EPA/ORD National Center for Environmental Assessment where we do chemical assessments. We are currently working on an assessment of ammonia, primarily to provide the Office of Water with values relevant to drinking water exposure. Since an ammonia assessment is likely to be of interest to the agricultural industry, we wanted to check with you to see if you would like a briefing on this work.

Regards,

Tina

==========
Tina Bahadori, Sc.D.
Director, National Center for Environmental Assessment (EPA/ORD/NCEA)
National Program Director, Human Health Risk Assessment (EPA/ORD/HHRA)
RRB Room 71210; Telephone: 202-564-7903; Mobile: Ex. 6

Message

From: Sands, Jeffrey [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B2AA28629ADE4AFB8D5EC12A8AAABA54-SANDS, JEFF]
Sent: 12/5/2017 2:09:32 PM
To: Subramanian, Hema [Subramanian.Hema@epa.gov]
Subject: FW: Friday NCGA meeting and EPA RFS Triennial Report

FYI....

For Friday's meeting.

From: Kathy Bergren [mailto:Bergren@ncga.com]
Sent: Monday, December 4, 2017 3:31 PM
To: Sands, Jeffrey <sands.jeffrey@epa.gov>
Subject: Friday NCGA meeting and EPA RFS Triennial Report

Jeff:

Hope things are going well for you at EPA.

Thank you in advance for taking time to meet with NCGA when our President, Kevin Skunes, is in town later this week. I'll join that meeting along with Kevin and Colleen Willard who handles our crop protection and water quality issues. We can get you a little more info on specifics Kevin is expected to bring up later this week, but from the renewable fuels side, he will likely ask about RVP, as you might guess.

I also wanted to check in with you on EPA's Triennial Report required on the RFS. As referenced in EPA's response to RFS rule comments, I understand the Agency will release the report in early 2018.

While I have obviously not seen the report or any drafts, from a meeting earlier this fall with USDA I also understand that USDA was consulted on the report with regard to agriculture issues. In general, the feedback from USDA was that EPA was not necessarily very receptive to USDA input on the report, including on issues such as changes in crop production practices, land use and conservation.

As EPA's work on the report continues, NCGA wanted to flag these potential concerns in order to ensure the most up-to-date and relevant information on crop production practices, technology and other agriculture considerations is reflected in this important review. Because it has been several years since EPA has issued a Triennial Report, it's clearly going to receive extra attention, and an accurate representation of farmers and their practices is important to NCGA.

In case we don't have time to dive into this issue during Friday's meeting, just wanted to flag this report for you as important to corn growers when it comes to including the best information.

Thanks, and see you Friday.

Kathy

Kathy Bergren
Director, Public Policy
National Corn Growers Association
20 F Street NW, Suite 600

Ex. 6 - Personal Privacy

bergren@ncga.com

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Message

From: Sands, Jeffrey [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B2AA28629ADE4AFB8D5EC12A8AAABA54-SANDS, JEFF]
Sent: 11/13/2017 3:52:24 PM
To: Bennett, Tate [Bennett.Tate@epa.gov]
Subject: FW: MS Farm Bureau
Attachments: Attendee listEPA.xlsx; Gaddis Farms Fact Sheet.doc; IMG_3440.JPG; IMG_1873.JPG; MFBFDCFlyIn2017Final.pdf

---

From: Ferguson, Justin [mailto:jferguson@msfb.org]
Sent: Saturday, November 11, 2017 6:36 AM
To: Sands, Jeffrey <sands.jeffrey@epa.gov>
Subject: MS Farm Bureau

Jeff:

Attached are a few items we discussed.

1. The entire list of our attendees.
2. Background on Ted Kendall IV's farm.
3. A picture of Mr. Pruitt, Governor Bryant, and Mr. Kendall.
4. An additional picture that Tate sent me from your office, a few weeks back.
5. Our overall agenda for our conference/fly-in.

Thanks again for all your help. Look forward to meeting you.

Sincerely,
Justin

Justin Ferguson
National Affairs Coordinator
Commodity Coordinator for Major Row Crops
Industry Affairs Liaison
Mississippi Farm Bureau ® Federation
Ex. 6 - Personal Privacy
jferguson@msfb.org

10-6-17

THE GADDIS FARMS

OWNERSHIP: A family owned Corporation that was started in 1897 and incorporated in 1937.

LAND AREA: In excess of 28,000 acres of land is involved in this operation which consists of a number of farms that lie in a geographical area between Raymond, Bolton, Edwards and The Big Black River in Hinds County, MS.

MANAGEMENT: Ted H. Kendall III – Chairman
Ted H. Kendall IV –President, Manager
Kendall Garraway – Vice-President, Manager

LAND USES: Cotton – 1500 acres
Soybeans – 2500 acres
Corn – 2500 acres
Hybrid Bermuda Hayfields – 500 acres
Improved Pasture – 8000 acres
Winter Grazing – 1200 acres
Pine Plantations – 5500 acres
Hardwood Timber – 6500 acres

Approximately 75% of The Gaddis Farms acreage is utilized in hunting leases and hunting clubs.

LIVESTOCK:

Brood Herd – Approximately 1250 cows. Breeds used are Angus, Brangus, and Gelbvieh. All raised calves are weaned and placed in the winter grazing operation.

Winter Grazing – All home raised calves plus approximately 1000 purchased calves are placed on ryegrass pastures in the fall and grazed until May or June and then are either sold on the Producers Internet Auction or sent to a feedyard under a retained ownership program.

Retained Ownership – Approximately 500-1000 head are fed in Kansas and Nebraska.

Message

From: Sands, Jeffrey [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B2AA28629ADE4AFB8D5EC12A8AAABA54-SANDS, JEFF]
Sent: 1/15/2018 3:05:49 PM
To: Abboud, Michael [abboud.michael@epa.gov]
Subject: FW: Jeff Sands Meeting List
Attachments: Jeff Sands Meetings.pdf

Michael,

Realized I did not fully format the last attachment. Please see attached.

Best,
Jeff

From: Sands, Jeffrey
Sent: Monday, January 15, 2018 10:00 AM
To: Abboud, Michael <abboud.michael@epa.gov>
Subject: Jeff Sands Meeting List

Michael,

Please find attached a meeting list. Let me know if you need anything else to send along to Steve.

Best,

Jeffrey Sands
Senior Advisor to the Administrator for Agriculture Policy
1200 Pennsylvania Ave, NW
2415 WJC North
Washington, DC 20460
(202) 564-2263

National Cotton Council
National Council of Farmer Cooperatives
Newtrient, Inc.
Pesticide Program Dialogue Committee
USDA
National Cattlemen's Beef Association
National Association of State Depts. of Ag
National Council of Farmer Cooperatives
American Farm Bureau Federation
Mississippi Farm Bureau
EPA Region 10 State Depts. of Agriculture
National Pork Producers Council
American Seed Trade Assoc.
The Fertilizer Institute
Innovation Center for U.S. Dairy
Russell Redding, PA Ag Secretary Greg Hostetter, PA Deputy Ag Secretary Karl Brown, Executive Secretary, PA State Conservation Commission John Bell, Government Relations, PA Farm Bureau Matt Royer, Director, Penn State, Ag and Environment Center Jennifer Reed-Harry, PennAg Industries, Inc. Jim Harbach and Jim Hershey, PA No Till Alliance, and PA producers Jake Reilly, Director of Chesapeake Bay Programs, National Fish & Wildlife Foundation
Organic Trade Association
GA Farm Bureau
Cotton Council
National Corn Growers Assoc.
EPA Region 7&8 State Department of Agriculture Meeting
New Mexico Secretary of Ag
National Association of Conservation Districts
USDA NIFA
CropLife America
State Agricultural and Rural Leaders
Pennsylvania Farm Show (meeting with EPA Region 3, PA Secretary of Agriculture, PA Dept. of Environmental Quality, Penn Ag)
EPA Region 6 State Departments of Agriculture
Renewable Fuels Association, Growth Energy, American Coalition for Ethanol

Message

From: Sands, Jeffrey [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B2AA28629ADE4AFB8D5EC12A8AAABA54-SANDS, JEFF]
Sent: 1/15/2018 3:00:12 PM
To: Abboud, Michael [abboud.michael@epa.gov]
Subject: Jeff Sands Meeting List
Attachments: Jeff Sands Meetings.pdf

Michael,

Please find attached a meeting list. Let me know if you need anything else to send along to Steve.

Best,

Jeffrey Sands
Senior Advisor to the Administrator for Agriculture Policy
1200 Pennsylvania Ave, NW
2415 WJC North
Washington, DC 20460
(202) 564-2263

National Cotton Council
National Council of Farmer Cooperatives
Newtrient, Inc.
Pesticide Program Dialogue Committee
USDA
National Cattlemen's Beef Association
National Association of State Depts. of Ag
National Council of Farmer Cooperatives
American Farm Bureau Federation
Mississippi Farm Bureau
EPA Region 10 State Depts. of Agriculture
National Pork Producers Council
American Seed Trade Assoc.
The Fertilizer Institute
Innovation Center for U.S. Dairy
Russell Redding, PA Ag Secretary Greg Hostetter, PA Deputy Ag Secretary Karl Brown, Executive Secretary, PA State Conservation Commission John Bell, Government Relations, PA Farm Bureau Matt Royer, Director, Penn State, Ag and Environment Center Jennifer Reed-Harry, PennAg Industries, Inc. Jim Harbach and Jim Hershey, PA No Till Alliance, and PA producers Jake Reilly, Director of Chesapeake Bay Programs, National Fish & Wildlife Foundation
Organic Trade Association
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EPA Region 6 State Departments of Agriculture
Renewable Fuels Association, Growth Energy, American Coalition for Ethanol

Message

From: Sands, Jeffrey [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B2AA28629ADE4AFB8D5EC12A8AAABA54-SANDS, JEFF]
Sent: 11/8/2017 6:58:10 PM
To: Lisa Van Doren [lvandoren@ncfc.org]
Subject: Requested Information
Attachments: Jeff Sands BIO.DOCX

Lisa,

Please see attached.

Jeffrey Sands
Senior Advisor to the Administrator for Agriculture Policy
1200 Pennsylvania Ave, NW
2415 WJC North
Washington, DC 20460
(202) 564-2263

Jeff Sands is the Senior Advisor to the Administrator for Agriculture at US EPA. In this role, Jeff provides counsel to Administrator Pruitt on the agricultural community's perspective on actions that EPA takes to protect human health and the environment.

Jeff comes to EPA most recently from Syngenta, where he served as Manager of Federal Government and Industry Relations. Before working at Syngenta, Sands was director of public policy for the Agricultural Retailers Association from 2012 to 2015. Jeff also has Capitol Hill experience, having helped handle agricultural issues as an aide to Rep. Tom Marino (R-Pa.).

Sands has a master's degree in public administration as well as a bachelor's degree in organizational communication from Valdosta State University. He also has a degree in environmental horticulture from Abraham Baldwin Agricultural College.

Message

From: Sands, Jeffrey [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B2AA28629ADE4AFB8D5EC12A8AAABA54-SANDS, JEFF]
Sent: 11/6/2017 9:36:53 PM
To: Shane Kinne [skinne@mocorn.org]
Subject: RE: Phone Call

Great. (202) 564-2263

From: Shane Kinne [mailto:skinne@mocorn.org]
Sent: Monday, November 6, 2017 4:31 PM
To: Sands, Jeffrey <sands.jeffrey@epa.gov>
Cc: Samantha Davis <sdavis@mocorn.org>; Darrick Steen <dsteen@mocorn.org>
Subject: RE: Phone Call

We can just gather at my office in call your office line if that works on your end.

Shane

From: Sands, Jeffrey [mailto:sands.jeffrey@epa.gov]
Sent: Monday, November 6, 2017 3:30 PM
To: Shane Kinne <skinne@mocorn.org>
Cc: Samantha Davis <sdavis@mocorn.org>; Darrick Steen <dsteen@mocorn.org>
Subject: RE: Phone Call

Thanks Shane.

Is there a number I should count on calling you or would the group like to get together and call me on my office line?

From: Shane Kinne [mailto:skinne@mocorn.org]
Sent: Monday, November 6, 2017 3:47 PM
To: Sands, Jeffrey <sands.jeffrey@epa.gov>
Cc: Samantha Davis <sdavis@mocorn.org>; Darrick Steen <dsteen@mocorn.org>
Subject: RE: Phone Call

That works well, Jeff. We appreciate it.

Shane

From: Sands, Jeffrey [mailto:sands.jeffrey@epa.gov]
Sent: Monday, November 6, 2017 1:30 PM
To: Shane Kinne <skinne@mocorn.org>
Cc: Samantha Davis <sdavis@mocorn.org>; Darrick Steen <dsteen@mocorn.org>
Subject: RE: Phone Call

Hey all,

I appreciate you reaching out. How does Thursday morning look on your calendars, say 9:30PM your time?

Thanks much for your consideration. Look forward to speaking soon.

Best,
Jeff

From: Shane Kinne [mailto:skinne@mocorn.org]
Sent: Thursday, November 2, 2017 12:18 PM
To: Sands, Jeffrey <sands.jeffrey@epa.gov>
Cc: Samantha Davis <sdavis@mocorn.org>; Darrick Steen <dsteen@mocorn.org>
Subject: RE: Phone Call

Those folks are now copied. Can't even blame it on being a Monday.

Thanks, Jeff.

Shane

From: Shane Kinne
Sent: Thursday, November 2, 2017 9:56 AM
To: 'sands.jeffrey@epa.gov' <sands.jeffrey@epa.gov>
Subject: Phone Call

Hi Jeff,

I hope all is well. How about those Dawgs? Definitely a better year to be a Georgia fan than Mizzou.

Copied on this email is Samantha Davis and Darrick Steen. Samantha works with me on policy issues and Darrick is our lead on all things environmental. He works with us and Missouri Soybean. Would you have anytime next week to jump on the phone with the three of us?

Thanks in advance!

Shane Kinne
Director of Public Policy
Missouri Corn Growers Association

Message

From: Sands, Jeffrey [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B2AA28629ADE4AFB8D5EC12A8AAABA54-SANDS, JEFF]
Sent: 11/6/2017 9:29:30 PM
To: Shane Kinne [skinne@mocorn.org]
CC: Samantha Davis [sdavis@mocorn.org]; Darrick Steen [dsteen@mocorn.org]
Subject: RE: Phone Call

Thanks Shane.

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Sent: Monday, November 6, 2017 3:47 PM
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Cc: Samantha Davis <sdavis@mocorn.org>; Darrick Steen <dsteen@mocorn.org>
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Cc: Samantha Davis <sdavis@mocorn.org>; Darrick Steen <dsteen@mocorn.org>
Subject: RE: Phone Call

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Shane

From: Shane Kinne
Sent: Thursday, November 2, 2017 9:56 AM
To: 'sands.jeffrey@epa.gov' <sands.jeffrey@epa.gov>
Subject: Phone Call

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Shane Kinne
Director of Public Policy
Missouri Corn Growers Association

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Sent: 11/6/2017 7:29:30 PM
To: Shane Kinne [skinne@mocorn.org]
CC: Samantha Davis [sdavis@mocorn.org]; Darrick Steen [dsteen@mocorn.org]
Subject: RE: Phone Call

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From: Shane Kinne [mailto:skinne@mocorn.org]
Sent: Thursday, November 2, 2017 12:18 PM
To: Sands, Jeffrey <sands.jeffrey@epa.gov>
Cc: Samantha Davis <sdavis@mocorn.org>; Darrick Steen <dsteen@mocorn.org>
Subject: RE: Phone Call

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Thanks, Jeff.

Shane

From: Shane Kinne
Sent: Thursday, November 2, 2017 9:56 AM
To: 'sands.jeffrey@epa.gov' <sands.jeffrey@epa.gov>
Subject: Phone Call

Hi Jeff,

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Shane Kinne
Director of Public Policy
Missouri Corn Growers Association

Message

From: Sands, Jeffrey [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B2AA28629ADE4AFB8D5EC12A8AAABA54-SANDS, JEFF]
Sent: 1/8/2018 5:56:50 PM
To: Kyle Harris [kharris@corn.org]
CC: Subramanian, Hema [Subramanian.Hema@epa.gov]
Subject: RE: Ag Biogenic CO2

Kyle,

Hope this note finds you well. How does next Wednesday look on your end for a meeting?

Thanks for your consideration. Look forward to speaking with you soon.

Best,
Jeff

From: Kyle Harris [mailto:kharris@corn.org]
Sent: Friday, January 5, 2018 12:47 PM
To: Sands, Jeffrey <sands.jeffrey@epa.gov>
Subject: Ag Biogenic CO2

My name is Kyle Harris and I manage the Environmental Affairs for the Corn Refiners Association, who chairs the Biogenic CO2 Coalition (please find our 1-pager attached).

I would appreciate the opportunity to come and brief you on our issue, which involves air emissions from the processing and/or combustion of short-cycle herbaceous crops. The Ag sector is poised to invest billions of dollars throughout the United States to expand the bioeconomy, which can provide 21st century solutions to economic growth, domestic energy security, and environmental benefits in the form of bioenergy, biofuels, and bioproducts made from corn, oilseeds, crop residues, farm wastes and other agricultural feedstocks.

We have been working on this issue closely with OAR, and Alex Dominguez has kindly given me your contact information.

Please advise any times that may work for you and your team where we could sit down and further discuss.

Thanks in advance,

Kyle

Kyle A. Harris, Esq.
Manager, Environmental Affairs/ Workplace Safety
Corn Refiners Association
www.corn.org
1701 Pennsylvania Ave NW
Suite 950, Washington, DC 20006
Office
Cell: (Ex. 6

CORN REFINERS ASSOCIATION

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Please consider the environment before printing this email

Message

From: Sands, Jeffrey [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B2AA28629ADE4AFB8D5EC12A8AAABA54-SANDS, JEFF]
Sent: 1/8/2018 4:19:55 PM
To: Dominguez, Alexander [dominguez.alexander@epa.gov]
Subject: Re: Biogenic CO2- Thank You

Thanks Alex.

I will get back to Kyle in short order. I would like to discuss this issue with you a bit as I am not as familiar as I would like to be on this particular issue.

JmS

Sent from my iPhone

On Jan 8, 2018, at 11:07 AM, Dominguez, Alexander <dominguez.alexander@epa.gov> wrote:

> Hey Jeff,
>
> Hope you had a good weekend. Kyle Harris from the Corn Refiners Association is looking connect with you regarding biogenic CO2. Disregard if you have already received an email from him, but if not I can connect you two or you can just reach out – whatever you prefer. Not sure if Mandy has spoken with you on this but I'm happy to discuss if needed. Anything else just let me know.
>
> Thanks,
> Alex
>
> **Alex Dominguez**
> Policy Analyst to the Principal Deputy
> Office of Air and Radiation
> U.S. Environmental Protection Agency
>
> ---
>
> **From:** Kyle Harris [mailto:kharris@corn.org]
> **Sent:** Monday, January 8, 2018 10:30 AM
> **To:** Dominguez, Alexander <dominguez.alexander@epa.gov>
> **Subject:** RE: Biogenic CO2- Thank You
>
> Alex,
>
> I hope the new year is treating you well! I was wondering if you had time for a quick phone call this week for a brief update on where things might be with Biogenic. I have also never been able to get ahold of Jeff Sands, so any advice on getting ahold of him would be appreciated!
>
> Best Regards,
>
> Kyle
>
> ---
>
> Kyle A. Harris, Esq.
> *Manager, Environmental Affairs/ Workplace Safety*
> <image001.png>

Corn Refiners Association
www.corn.org
1701 Pennsylvania Ave NW
Suite 950, Washington, DC 20006
Office
Cell: Ex. 6

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<image002.gif>

From: Dominguez, Alexander [mailto:dominguez.alexander@epa.gov]
Sent: Wednesday, November 08, 2017 10:38 PM
To: Kyle Harris <kharris@corn.org>
Cc: Atkinson, Emily <Atkinson.Emily@epa.gov>
Subject: RE: Biogenic CO2- Thank You

Hey Kyle,

Looping in Emily Atkinson who can assist with the logistics. As I mentioned, I am not entirely sure how the scheduling process works for the AA (let alone in a transition), but Emily might be able to provide a little more clarity.

Best,
Alex

Alex Dominguez
Policy Analyst to the Principal Deputy Assistant Administrator
Office of Air and Radiation
U.S. Environmental Protection Agency

From: Kyle Harris [mailto:kharris@corn.org]
Sent: Wednesday, November 8, 2017 4:10 PM
To: Dominguez, Alexander <dominguez.alexander@epa.gov>
Subject: Biogenic CO2- Thank You

Alex,

Thanks again for speaking with me today.

As follow up, I would appreciate the opportunity to come and speak with Mandy and brief the new AA for OAR on the Ag Biogenic Issue once confirmed.

If you could point me in the right direction for getting this scheduled that would be great!

Thanks in advance,

Kyle

Kyle A. Harris, Esq.
Manager, Environmental Affairs/ Workplace Safety
Corn Refiners Association
www.corn.org
1701 Pennsylvania Ave NW
Suite 950, Washington, DC 20006
Office
Cell: (
Ex. 6

<image001.png>

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<image002.gif>

Message

From: Sands, Jeffrey [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B2AA28629ADE4AFB8D5EC12A8AAABA54-SANDS, JEFF]
Sent: 11/3/2017 3:22:33 PM
To: Bennett, Tate [Bennett.Tate@epa.gov]
Subject: Comments
Attachments: FARM BUREAU WPS.PDF; NASDA REG REFORM.PDF; NASDA WPS.pdf; USDA REG REFORM.PDF

Tate,

Attached you will find comments from Farm Bureau, NASDA, and USDA on the Reg Reform docket as well as WPS. Important to note: there is overlap on WPS and C&T regarding minimum age.

Jeffrey Sands
Senior Advisor to the Administrator for Agriculture Policy
1200 Pennsylvania Ave, NW
2415 WJC North
Washington, DC 20460
(202) 564-2263

National Association of State Departments of Agriculture
4350 North Fairfax Drive
Suite 910
Arlington, VA 22203
Tel: 202-296-9680 | Fax: 703-880-0509
www.nasda.org

Filed via regulations.gov

August 15, 2014

Ms. Kathy Davis
Field and External Affairs Division
Office of Pesticide Programs
Environmental Protection Agency
1200 Pennsylvania Ave. NW.
Washington, DC 20460-0001

Office of Pesticide Programs
Environmental Protection
Mailcode: 28221T
1200 Pennsylvania Ave. NW.
Washington, DC 20460

Re: **Docket ID No: EPA-HQ-OPP-2011-0184 (*Pesticides; Agricultural Worker Protection Standard Revisions; Proposed Rule*)**

The National Association of State Departments of Agriculture (NASDA) submits the following comments on the U.S. Environmental Protection Agency's (EPA) Proposed Agricultural Worker Protection Standard Revisions (docket number EPA-HQ-OPP-2011-0184), published on March 19, 2014. We appreciate the Agency extending the comment period through August 18, 2014.

I. About NASDA

NASDA represents the Commissioners, Secretaries, and Directors of the state departments of agriculture in all fifty states and four U.S. territories. State departments of agriculture are responsible for a wide range of programs including food safety, combating the spread of disease, and fostering the economic vitality of our rural communities. Conservation and environmental protection are also among our chief responsibilities. In forty-three states, the state department of agriculture is the lead state agencies responsible for the regulation of pesticide use under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA).

II. General Overview

We support a thorough analysis of the current Agricultural Worker Protection Standard (hereinafter "WPS") regulations, which were last codified in 1992, and we believe there are opportunities to update and modernize the current WPS rule to better reflect and incorporate the significant scientific and technological advances in pesticide regulation, new product developments, product applications, and agricultural operations that have occurred over the last twenty-two years.

ED_004126_00000637-00001

At the same time, we question some of the Agency's findings and conclusions, which are cited as the basis for various provisions in the proposed WPS, and we ask EPA to consider our alternative suggestions or revisit those proposals following a thorough review and dialogue with state regulatory leads and the regulated community on alternative proposals. We have additional concerns with EPA's economic analysis, which does not fully and accurately account for the costs associated with implementing, complying, and enforcing the proposed changes, and we request EPA update the Economic Analysis for the proposed changes to better quantify the estimated costs to the FIFRA-state lead agencies (SLA), the state departments of agriculture, the regulated community, and other agricultural stakeholders.

Overall, we do not support comprehensive changes to the WPS regulations, and we are confident the current WPS, complimented by the Agency's robust risk assessment process for individual pesticides, protects farm workers and handlers through an effective and efficient regulatory framework for the both the SLAs and the regulated community. Instead, we urge the agency to focus available resources to work with state departments of agriculture, the State-FIFRA Issues Research & Evaluation Group (SFIREG), the Association of American Pesticide Control Officials (AAPCO), the regulated community, and other agricultural stakeholders to identify and modernize specific provisions within the current WPS regulatory jurisdiction.

III. Review of Preamble Information

We appreciate EPA providing information on the history of the proposed rule-making process, estimated costs, and alternative options the Agency considered but did not propose; however, in reviewing the preamble, we found several areas of concerns where we are compelled to correct potentially misleading interpretations, findings, or conclusions.

In general, the preamble includes broad conclusions on the demographics of migrant workers, cites numerous farmworker organizations, and alleges frequent acute overexposures and chronic illnesses of farmworkers as a basis for a number of the proposed changes, even when the pesticides involved are used according to EPA-approved label requirements. We are concerned these findings in the preamble lead to numerous, unfounded assumptions regarding worker exposures and chronic illnesses without supporting scientific evidence. As a result, many of the preamble's assumptions are in conflict with EPA's pesticide registration and reregistration processes and overlook the extensive worker-protection stewardship programs of SLAs, registrants, professional applicators, producers, and the regulated community.

The following specific comments are responses or requests for additional information related to various discussion points included in the preamble. We included direct citations to the Federal Register (Vol. 79, No 53/Wednesday, March 19, 2014/Proposed Rule) for clarity and ease of reference:

- <u>II. Background, E. Benefits of the Proposal</u>

We have a number of concerns with statements in the preamble indicating or implying a causal association between various pesticide exposures and certain chronic illnesses. EPA cites a reduction in these illnesses and associated risks under the estimated benefits to the proposed rules, but the Agency subsequently notes it is "not able to quantify the benefits expected to accrue from the proposed WPS changes that would reduce chronic exposure to pesticides."

ED_004126_00000637-00002

We consider it premature to estimate health benefits based on possible associations when there is no scientific evidence supporting such causal connections. As noted in the Agricultural Health Study (AHS), overall cancer incidence observed in the AHS is lower in the farmer population than the general population. As noted in the preamble, (III. Statutory Authority and Framework, B. EPA Regulation of Pesticides), EPA conducts a comprehensive and rigorous process for registering and re-evaluating pesticides, and EPA devotes significant resources to the regulation of pesticides to ensure each pesticide product meets the FIFRA requirement to not cause unreasonable adverse effects to the human health and the environment. We fully support EPA's scientifically-based review and registration approval process. However, the preamble narrative implying an estimated number of chronic illnesses are linked to various pesticide exposures is not supported by scientific data and is in conflict with the Agency's registration and reregistration review programs.

- IV. Overview of EPA's Protection of Pesticide Workers, D. EPA-OSHA Relationship

Under the section describing the EPA-Occupational Safety and Health Administration (OSHA) relationship, EPA and OSHA "agreed" that the "intended reach of the WPS was limited to occupational safety for pesticides and that OSHA was not preempted from regulating any non-pesticide chemical or other workplace hazards in agriculture." We are concerned with the potential regulatory jurisdictional expansion of OSHA onto farms and other agriculture establishments, and we request EPA provide additional information on the discussions and agreement that transpired under the OSHA-EPA working group discussion on jurisdictional overlap.

- V. Sources of Information for Improvement of Worker Protection, B. Stakeholder Engagement

The preamble includes a historical review of the Agency's stakeholder engagement during certain periods over the last twenty years, but we are concerned EPA's assessment of the 1992 WPS rule does not reflect or incorporate the significant scientific and technological advances in pesticide regulation, new product developments, product applications, and agricultural operations that have occurred over the last twenty-two years.

For example, EPA held numerous public meetings across the country from 1996 to 2000, but the preamble does not identify any similar public meetings in the last fourteen years. EPA initiated the National Assessment of EPA's Pesticide Worker Safety Program (National Assessment) in 2000, but this assessment concluded with a report in 2005, which was nine years ago. In 2006, the Agency consulted its Federal Advisory Committee, the Pesticide Program Dialogue Committee (PPDC) and formed a PPDC workgroup to provide feedback on the initial stages of this proposal, but the preamble notes the PPDC never reached a consensus. EPA then convened a Small Business Advocacy Review (SBAR) Panel in 2008 on the potential WPS revisions, but we submit the limited number of representatives who were invited to participated on the SBAR Panel was not sufficient or diverse enough to adequately inform EPA of the broad impacts the proposed rule might have on the wide range of agricultural businesses and interests that vary in size and scope across counties, states, and regions. Finally, EPA cites a Government Accounting Office (GAO) report on "Hired Farmworkers: Health and Well-Being at Risk," which was published in 2000.

We note there have been considerable improvements in safety and agricultural practices since each one of the above referenced resources the Agency relies on in this proposed rulemaking, and we

recommend EPA acknowledge and incorporate these advances in any further action with this rulemaking process.

- V. Sources of Information for Improvement of Worker Protection, F. Regulatory Review

In 2005, EPA reviewed the WPS to determine whether the rule should be amended, rescinded, or continue without change to minimize economic impacts on small entities while still complying with FIFRA. The preamble states the Agency received no comments on this request. The Agency interpreted the lack of comments to mean no changes to the WPS were necessary to minimize the impacts on small entities, but the request for comments was not based on the current proposed WPS rule, which will significantly impact small entities.

We recommend EPA review and respond to comments identifying areas where the proposed rule may impact small entities before proceeding with any final rule making.

- VII. Training for Workers and Handlers (D) Establish Trainer Qualifications (4) Details of the Proposal/Rationale

EPA states there are sufficient qualified trainers to meet the proposed requirements now, as opposed to when the 1992 WPS was implemented, and the Agency proposes to continue to allow certified applicators to conduct worker training until two years after the effective date of the final rule in order to ease implementation and ensure a sufficient number of qualified trainers is available. We agree certified applicators have the appropriate skill set and expertise to serve as WPS trainers under both the current and proposed WPS framework, but we do not think they should be phased out following the implementation of the final rule.

Further, we are confused by the Agency's statement citing a sufficient number of qualified trainers today, as opposed to 1992, but then referencing the need to permit certified applicators to continue training for two years after the rule is finalized in order to ensure a sufficient cadre of qualified trainers will be available. We request EPA clarify these conflicting positions, and we submit certified applicators do possess the appropriate skill set to continue as trainers, without exception or qualification.

- VII. Training for Workers and Handlers (E) Expand the Content of Worker and Handler Pesticide Safety Training (4) Details of the Proposal/Rationale (ii) Training on Reporting Violations and Employer Retaliation Prohibition

The preamble notes certain farmworker organizations requested WPS worker and handler training include contact information for legal representation, and we support EPA's contention that it is inappropriate to recommend particular attorneys or legal representation. We ask EPA to clarify whether the Agency feels it is appropriate to recommend a non-particular attorney or legal representative within the context of the WPS proposal. We agree with EPA that including such a notification would not significantly contribute to the goals of FIFRA.

IV. Comments on Statutory & Executive Order Reviews

- XXIII. Statutory and Executive Order Reviews (C) Regulatory Flexibility Act (RFA)

In the preamble, EPA certifies the proposed WPS rule will not have a significant adverse economic impact on a substantial number of small entities. However, we note the Agency estimates the rule will affect over 300,000 small farms, nurseries, and greenhouses, and several hundred small commercial entities that are contracted to apply pesticides. We contend EPA's anticipated impact of less than 0.1% of the annual value of sales or revenues for the average small entity is understated, and we recommend EPA undertake additional sensitivity analysis related to small commercial entities before certifying the proposed action will not have significant adverse economic impacts on these entities.

- XXIII. Statutory and Executive Order Reviews (D) Unfunded Mandates Reform Act (UMRA)

EPA claims the proposed rule does not contain a federal mandate that may result in expenditures of $100 million or more for state, local, and tribal governments, in the aggregate, or the private sector in any one year. The Agency estimates the costs of the proposed rule are between $65 million and $75 million per year. EPA then states the proposed rule is not subject to the UMRA because it contains no regulatory requirements that may significantly or uniquely affect small governments.

We contend the proposed WPS rule will, in fact, significantly and uniquely affect small governments and the SLA charged with enforcing the proposed rule changes. For example, the proposed rule will require additional training, staff time, and resources for SLAs to familiarize themselves with the new regulations, assist in educating the regulated community in their states, and facilitate train-the-trainer programs. These costs will be significant, especially during the first several years of implementation.

- XXIII. Statutory and Executive Order Reviews (E) Executive Order 13132: Federalism

EPA states the proposed action does not contain any federalism implications and would not have substantial direct effects on the states or the relationship between the national government and the states. However, there are several potential federalism issues that may arise contingent on specific changes to the regulatory language in the final WPS rule. Several states have expressed concern that their pesticide programs will have to be restructured or redesigned depending on the final WPS rule. We ask EPA to identify and resolve any potential federalism issues with the state regulatory partners prior to any final rulemaking.

V. Review of Economic Analysis

We are concerned EPA did not fully and accurately capture the estimated costs to agricultural producers and state lead agencies in complying and enforcing the proposed WPS rule. As EPA notes throughout the preamble and the economic analysis (EA), many of the inputs are difficult to quantify. We agree with that conclusion, but we feel the estimated economic analysis understates the true cost of the proposed action to all stakeholders and regulatory partners.

For example, EPA acknowledges the rule will affect an estimated 300,000 or more small farms, nurseries, and greenhouses, plus many hundred small commercial entities, including aerial and ground applicators, contracted to control pests. The Agency certifies the proposed WPS rule will not have a significant adverse economic impact on a substantial number of small entities; however, we contend EPA's anticipated impact of less than 0.1% of the annual value of sales or revenues for the average small entity is understated. EPA also estimates there will be no costs to other governmental agencies, but there will be numerous additional costs, especially during the first several years of implementation, to state lead agencies required to facilitate, implement, and enforce the proposed WPS rule.

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While it is difficult to accurately assess all of the additional costs the proposed changes or final rule may entail, we identified the following challenges not accurately captured in the Agency's EA. For example, the proposed rule includes significant new training requirements for the Train-the Trainer program. One state's WPS specialist estimated current training time is approximately four hours, but the proposed training requirements will take an estimated two days. The same specialist estimated the worker training class time will double and handler training time will be increased by 50%, which does not include the necessary and additional preparation time.

The proposed changes will require significant staff time to provide outreach to workers, handlers, applicators, agricultural employers, trainers and other stakeholders. Under the proposal, current trainers will become obsolete and will require retraining. In one state alone, there are an estimated 700 current trainers that will require retraining during the same period the SLA will be conducting outreach to the agricultural community under the proposed rule. In one state, the actual on-site inspection under the current WPS rule averages three hours in duration. Under the proposed rule, inspections in the same state are anticipated to require approximately 50% more time, due to review of the proposed additional record keeping and site information requirements. In another state, the estimated economic impact to carry out enforcement and compliance activities in the first year of implementation will be a minimum of $500,000.

The proposed changes to the WPS, as written, will require EPA to commit significant and sustained resources to the state regulatory partners to facilitate implementation and compliance needs, and we ask the Agency to work with the state departments of agriculture, SFIREG, and AAPCO to identify the level and duration of the necessary funding streams to carry out educational, training, and compliance efforts prior to any further actions with this proposed rulemaking.

VI. Responses to EPA's Specific Request for Comment

The following comments are in response to EPA's specific request for comment on various provisions of the proposed WPS rule. We provide additional narrative on several of the following provisions in our comments to specific sections below. If no comment is provided, we support maintaining existing WPS regulations.

1. Training for Workers and Handlers

A. Shorten Retraining Interval for Workers and Handlers

We do not support an annual mandatory training requirement for workers and handlers. Short of allowing the individual states to identify and require a training interval period reflective of the agricultural worker population and operations in their individual states, we support maintaining the mandatory five year interval training cycle.

We believe states should be permitted to align the WPS training interval for workers and handlers with the individual state's requirements for Private Applicator Certification, which range from three to five years in many states. In this context, retaining a five year training requirement would not trigger any potential federalism issues and, where appropriate, allow certain states to implement a more restrictive training interval consistent with the operations and agricultural demographics in their respective states.

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We recognize certain states and some larger agricultural employer operations already require shorter training intervals through state regulations or internal protocols, and we defer to those states and operations as being better informed on the needs and criteria for their stakeholders and operators.

Some of these larger employers provide some form of continual training every year specific to individual employee responsibilities. In contrast, many of the smaller employers, operators, and growers retain the same employees year after year, and these employees have received and benefited from extensive training throughout their extended employment relationship. Mandating an annual training requirement for these small growers and operators would significantly and negatively impact their operations without adding any worker protections or regulatory benefits, and we contend the individual SLA is better informed and suited to determine the appropriate regulatory requirements for their stakeholders.

B. Establish Recordkeeping Requirements To Verify Training for Workers and Handlers

We oppose a requirement for employers to report worker and handler training information to the SLAs. Because workers have a tendency to be mobile and work in multiple states, state-by-state record keeping would be costly and confusing. As an alternative, we encourage EPA to consult with NASDA, SFIREG, AAPCO, and the regulated community to discuss and review the benefits and drawbacks of developing a central repository for basic training information submitted to and retained by EPA. For clarity, we do not support including the date of birth as a requirement.

Additionally, we oppose a performance standard to evaluate worker and handler training. Empirical evidence provided by several states indicates closed-book exams will eliminate most of the low literacy workforce while open-book exams will foster fraudulent practices and work-around mechanisms.

C. Establish Trainer Qualifications

We support the standardization of trainer qualifications for worker training, and we support retaining the certified applicators ability to train handlers. Attending a "train-the-trainer" course does not, in and of itself, produce qualified trainers, and we note there is a distinct difference between evaluating a trainer's understanding of the technical material to be presented and evaluating a trainer's proficiency in effectively communicating a training message. Neither EPA nor SLAs have resources to ensure trainers are competent to provide adult education to low literacy trainees. It is best that the training qualification standards be limited to an existing set of standards, such as those for certified pesticide applicators.

D. Expand the Content of Worker and Handler Pesticide Safety Training

We support clarification of the training content, and we recommend EPA reduce and simplify the list of topics to emphasize general safety topics. Many of the topics in the expanded proposed list for handler training is duplicative of certified applicator training. For example, we believe the following training points are beyond the scope of the WPS and should not be considered in the final proposal: 1) environmental concerns, 2) information on proper application and use of pesticides, 3) requirement for handlers to follow all pesticide label directions, and 4) format and meaning of all information contained on pesticide labels and labeling.

To clarify, we support these training requirements for non-certified applicators under the supervision of

certified applicators to ensure pesticides are legally applied according to the label with environmental safety in mind, but these items do not relate directly to worker or handler safety and protection. These provisions are better addressed in an applicator certification rule. By including these training points in the WPS, it appears as if the Agency is attempting to expand the regulatory liability of handlers beyond the intent and scope of the rule.

E. Retain Audiovisual Presentations as Permissible Methods for Pesticide Safety Training

We support retention of audiovisual presentations as a permissible method of safety training. Trying to establish regulatory mechanisms to ensure effective training is beyond the ability of the Agency and SLAs.

F. Eliminate Exception to Handler Training Requirement

We oppose eliminating the handler training exception for certified applicators. First, it would be illogical to retain the option for certified applicators to serve as acceptable trainers of agricultural handlers if those same certified applicators do not qualify as being already trained. Second, the majority of the handler training points in the rule are already covered in the applicator training and competency exams, and the applicator certification program and standard is much more significant and rigorous than required for handler training.

2. Notifications to Workers and Handlers

A. Posted Notification Timing & Oral Notification

We oppose any additional recordkeeping requirement since such records would be costly to keep and are susceptible to fraud. A record does not necessarily ensure oral notification actually occurred, only that a record was created, and we do not see any identifiable regulatory or protection benefits. Furthermore, several states maintain the requirement for displaying the poster or information at an identifiable location is an efficient and effective means for providing pertinent information and communicating timely notifications to workers and other stakeholders.

B. Warning Sign Content

We oppose replacing the current posting sign with any sign that is new or different. "Entry Restricted" or alternative language does not provide any additional information, worker protections, or regulatory benefit.

3. Handler Restrictions

A. Suspend Applications

We believe the cease application proposal will not provide any additional regulatory benefits or worker protections. A performance standard prohibiting application in a manner so as to contact any worker through drift already exists on WPS labeled pesticide products. See our additional comments below specific to §170.105.

B. Establish Minimum age of 16 for Handling Practices

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We support establishing a minimum age of 16 for handlers, but we oppose a minimum age of 18 for handlers/applicators, which would trigger federalism issues and require many states to enact a statutory or regulatory change.

4. Display of Basic Pesticide Safety Information

A. *Location of Basic Pesticide Safety Information Display*

We oppose a requirement for displaying the poster or information at a particular location for handlers. Decontamination supplies are carried in a decontamination kit. The required information will be contained in that kit. As such, a poster, even a reduced size poster is likely never to be viewed. Having the information/poster displayed at the base of operation mix/load site would be much more a much more beneficial method of communication.

5. Emergency Assistance

As written, the proposed rule would require agricultural employers to provide a range of "emergency" responses "within 30 minutes" to a person who is or ever "has been employed" by an agricultural establishment.

With this proposal, the agency would change "prompt" to "within 30 minutes." For many employers and aerial applicators ("*handlers*") this change would impose an impractical and legal burden for those operations further than 30 minutes from an operating emergency medical treatment facility. We recommend EPA retain the current "prompt" response that recognizes variable geographic locations and proximity to transportation and medical facilities, instead of expecting a response "within 30 minutes" under all circumstances.

We request the Agency further define "poisoned or injured" in Section 170.9(f). The current definition is vague and could cause agricultural employers to be required to provide emergency assistance for minor health issues that may not be pesticide related. Furthermore, the requirement to provide emergency assistance to any person who "has been employed" implies any person, ever employed, for any period of time, by an agricultural employer suggests they could make this demand at any interval following the conclusion of their employment. This subsection creates significant technical and legal burdens, and we recommend responsibilities for emergency responses should apply only to *current* employees seeking emergency medical assistance for acute incidents.

6. Monitoring Handler Exposure to Cholinesterase-Inhibiting Pesticides

We support the Agency's decision not to propose monitoring.

VII. Comments on Proposed Changes to 40 CFR Part 170

The following specific comments are intended to provide greater insights and, where identified, recommend alternatives to improve the proposed rule. We contend the proposed rule should provide the state lead agencies increased flexibility in structuring and enforcing certain WPS provisions to better reflect the diversity of agricultural operations in their states. The states are better positioned to understand, provide, and inform an efficient and effective WPS regulatory framework that will prevent

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unreasonable adverse effects of pesticides among pesticide applicators, workers, handlers, the general public, and vulnerable groups while simultaneously minimizing the adverse economic impact the new proposals may have on small entities in their respective states.

The following comments are specific responses or requests for additional information under 40 CFR Chapter I, subchapter E, part 170:

- **§ 170.5 – Definitions**

Authorized representative: We request EPA remove *"Authorized representative"* from the proposed rule. We recognize at least one state has this provision included in its state regulations, and we understand the inclusion has led to a range of complications and on-going litigation that does nothing to forward the purpose of the WPS or facilitate a sound regulatory framework. If mandated in the Code of Federal Regulations, the new provision will lead to numerous complications for both the state regulatory agency and the regulated community in trying to comply with the proposed WPS rule, even if the designation is required in writing, while protecting against liability in responding to fraudulent claims or interests seeking to utilize this provision for non-WPS purposes. We oppose this proposal.

Immediate Family: We support EPA's proposed expanded definition of "Immediate Family." We feel this expanded definition provides greater clarity to who qualifies under the immediate family exemption and will assist both the regulated community and state regulatory agency in ensuring compliance with the proposed rule. We also support the exemptions allowed for members of the owner's immediate family.

Worker Housing Area: Defined as any place or area of land on or near an agricultural establishment where housing or space for housing is provided for workers or handlers by an agricultural employer, owner, labor contractor, or any other person responsible for the recruitment or employment of agricultural workers. We request EPA define and clarify the term "near" within this definition.

- **§ 170.9 – Agricultural Employer Duties (a)**

This section incorrectly places an extraordinary burden on the agricultural employer not justified by WPS or FIFRA, and we recommend EPA revise this section to clarify the agricultural employer is responsible solely for compliance with the WPS portions of the pesticide product label, not the entire pesticide product label and labeling.

Extending regulatory requirements to issues beyond the WPS is exceeding the intent and scope of this rule. The current FIFRA pesticide applicator certification program is based on label compliance by individuals who have demonstrated competency to apply pesticides. Arbitrarily extending those requirements to non-certified individuals is completely contradictory to that premise.

If it is the Agency's intent to develop a shared liability provision for label compliance, that objective should be addressed through a separate and distinct proposed rulemaking process addressing all pesticide products, not embedded in a proposed WPS rule intended to protect workers and handlers. We note any provision not specifically addressing protection of workers and handlers is not germane to WPS and should not be included in this proposed rule.

- **§ 170.9 – Agricultural Employer Duties (e)**

We recommend EPA clarify, in this section and all subsequent sections in this proposal, any reference to responsibilities or relationships between "agricultural employers" and "workers" or "handlers" apply solely to situations where a formal relationship or legal obligation exists between the parties captured under the WPS framework. Without such clarification, the proposal may be interpreted to apply to the entire universe of workers and handlers, regardless of any formal or legal relationship.

- **§ 170.9 – Agricultural Employer Duties (f),(1), and (2)(ii) and (iii)**

As noted above, this section should be narrowed and restricted to acute incidents and current employees seeking "emergency" medical assistance. The proposed language requiring agricultural employers to provide emergency assistance to a person who is or "has been employed" is problematic for compliance, enforcement, and fraught with potential abuse. The proposal implies any person, ever employed, for any period of time, by an agricultural employer could make this demand at any interval following the conclusion of their employment. We recommend EPA limit this obligation to those "currently employed."

Additionally, subparts (2)(ii) and (iii) should be deleted from the emergency information assistance requirements. It is unclear how this information is relevant or useful in providing emergency assistance to a worker or handler. This proposed regulatory requirement does not have an identifiable purpose and will only serve as an unnecessary opportunity for a technical violation. We request EPA clarify and define what will qualify as an "emergency medical facility."

- **§ 170.9 – Agricultural Employer Duties (k)**

EPA should retain the existing language for any restricted treated areas within a ¼ mile of where the handlers will be located. Extending the requirement to all entry restricted areas, or treated areas where a restricted-entry interval is in effect would place an extraordinary burden on growers, especially for large operations with expansive farms and multiple locations. Information should be provided concerning those areas in which or near which the commercial handler will be working. Requiring additional information concerning other locations on the agricultural establishment will not provide additional protection.

- **§ 170.11 – Pesticide Information Requirements on Agricultural Establishments (a)(1)(ix)**

This section should be segregated into two separate sub-sections, one for seeking medical attention and one for the state lead agency (SLA) contact information. As written, if the two are combined the injured worker will be contacting the SLA for medical assistance. In addition, EPA should state and clarify the purpose for posting the SLA contact information.

Additionally, we do not support a requirement to provide pesticide safety information at all decontamination sites. Such information should be a requirement only at fixed decontamination sites with fixed or portable infrastructure. For many handlers, decontamination supplies are provided on application equipment or carried in vehicles. Inclusion of this material in such situations is not reasonable or useful, and increased training for handlers reduces the need for this information.

- **§ 170.11 – Pesticide Information Requirements on Agricultural Establishments (b)**

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This section and numerous other sections throughout this rule should be revised to reference pesticide product "labels" not "labeling". Under FIFRA, "labeling" includes "all labels and other written, printed, or graphic matter accompanying the pesticide at any time or to which reference is made on the label or on in literature accompanying the pesticide." Based on this definition, the universe of labeling materials for any pesticide can be enormous or imprecisely defined.

There is no identified regulatory benefit or increased protections identified in providing this level of information to a worker or handler or to require this vast amount of information to be retained under the record keeping requirement. This is an unnecessary provision that will result in technical violations but provide no added benefits to worker protections. The pesticide label and the EPA registration number of the product are sufficient to provide appropriate information for emergencies.

- **§ 170.13 – Commercial Pesticide Handler Employer Duties (k)(2)(i) and (ii)**

These sections should be deleted from the emergency information assistance requirements. See comments for Section 170.9(f)(2)(ii) and (iii) above.

- **§ 170.101 – Training Requirements for Workers (c)(4)(ii)**

This section should be revised to reflect there is no distinction or difference between a trainer eligible to train workers or handlers. It is inconsistent to imply the basic skill set of a trainer of workers is significantly different from that of a trainer of handlers. Neither EPA nor the SLAs are qualified to evaluate the proficiency or one type of trainer versus another. Those type of distinctions are very subjective and beyond the capabilities of those responsible for compliance with this rule. Furthermore, a certified pesticide applicator is legally capable of training and supervising a non-certified applicator to apply restricted use pesticides around people and into the environment, but the proposal implies the same certified applicator is not capable of training a worker on appropriate protections from pesticide exposure. We challenge the premise of this proposal.

- **§ 170.101 – Training Requirements for Workers (d)**

We do not support the recordkeeping section, and recommend EPA remove this requirement from the final rule. The possibility for use of fraudulent records is real, and verification of the training record could require significant resources by SLA personnel. The resource and verification challenges increase significantly if the record is provided by an out of state trainer.

This provision merely shifts the current regulatory responsibility from the Agency and SLAs, who have historically implemented this provision, to agricultural employers. In addition, the cost and confusion of implementing and maintaining a new record keeping requirement seems considerable for an unproven benefit or improvement.

As an alternative, we encourage EPA to consult with NASDA, SFIREG, AAPCO, and the regulated community to discuss and review the benefits and drawbacks of developing a national data base used by certified trainers to enter information, coupled with a national card with a scannable bar code. State lead agencies could then access the data base to verify the training record. If such a system is not supported or created, training records should be provided to employees upon request, but there should not be a requirement to provide this information to employees. SLAs should not be expected to rely on the employee-provided record to verify training. For clarity, we do not support including the date of

birth as a requirement.

- **§ 170.105 – Entry Restrictions Associated with Pesticide Applications**

We have several concerns with the proposed entry-restricted area (ERA) requirement, and we note the current WPS rule already requires handlers and applicators to take actions necessary to ensure bystanders and other unauthorized persons are not exposed to spray or spray drift.

Furthermore, EPA's exposure, risk assessments and pesticide labels include conservative protections for applicators, handlers, agricultural workers and bystanders in pesticide product labels. Existing label restrictions and state regulations adequately protect bystanders and "other persons" from exposure during application. Establishment of another area to be controlled, which varies by application type or method, and which may vary from existing label requirements, will complicate training and enforcement. It is not evident that there will be any increase in protection for workers or handlers as a result of this change. We note the requirement for 25-100 foot wide ERA is not supported by advances in spray drift reduction technologies (DRTs), applicator standard operating procedures (SOPs) or published incident data, and the requirement for an ERA is not justified.

Additionally, we recommend EPA remove all references to "other persons" or "any person" in this section, corresponding tables, and other citations in the proposed rule. Extending the WPS regulatory jurisdiction to the universe of all individuals, who are not agricultural workers or handlers, is not within the scope of the WPS framework and should not be included in this proposed rule.

- **§ 170.109 – Oral and Posted Notification of Worker Entry Restrictions (b)(1)(ii)**

This section should be revised to include an exemption for inclement weather or other unforeseen incidents, such as, "unless weather or circumstances beyond the control of the applicator or agricultural employer delays the application." Adding a provision recognizing the realities of weather and other unforeseen contingencies is a reasonable way to avoid unnecessary technical violations that provide no additional regulatory or worker protections.

- **§ 170.109 – Oral and Posted Notification of Worker Entry Restrictions (b)(1)(iv)**

The three day after application or REI posting sign removal requirement in this section should be deleted. As is, this provision allows the possibility of a technical violation for failure to remove a posting sign by a specified date without adding any regulatory benefits or additional protections for workers or handlers. The impetus to remove the posting signs to allow re-entry and return to unimpeded agricultural operations will be on the agricultural employer.

- **§ 170.109 – Oral and Posted Notification of Worker Entry Restrictions (b)(2)**

The switch in posting sign language from "KEEP OUT" to "ENTRY RESTRICTED" should be deleted. There is no identified regulatory benefit or increased worker protections, but this proposal would add additional costs and confusion for the regulated community.

- **§ 170.201 – Training Requirements for Handlers (c)(1)**

This section should be revised to require only the trainer be available during the training session and

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question & answer session, rather than be present continuously throughout the entire training. If training is being facilitated by an approved video or other media that does not require continuous attention by the trainer, there is no identified benefit or enhanced protections, other than an opportunity for a technical violation that adds unproven additional protections to workers or handlers.

- **§ 170.201 – Training Requirements for Handlers (c)(2)(iv),(vii), and (ix)**

These items should be deleted from required training elements for handlers because this type of training requirement is already covered in applicator certification training and in non-certified applicator supervision requirements.

- **§ 170.201 – Training Requirements for Handlers (c)(3)**

This section should be revised to delete the requirement to suspend applications when 'other persons' are in the treatment area. The requirement to prohibit pesticides to contact any person is already included on pesticide labels, and the burden is on the applicators to ensure compliance with this existing label requirement. This protection for "other persons" should not be included in the WPS rule.

- **§ 170.201 – Training Requirements for Handlers (d)**

This section should be deleted. This extensive recordkeeping requirement for proof of training creates an unnecessary burden and expense for the agricultural producer without any identifiable increased benefits or protections. The current requirements in the existing rule are adequate. From a compliance standpoint, if an SLA is investigating a for-cause complaint for determination of compliance with the training requirement, examining training records alone will probably not satisfy the burden of proof for a significant enforcement action. This is especially true if any training records are found not to be 100% accurate and complete for all trainees. Again, adding this recordkeeping requirement creates the opportunity for technical violations without a demonstrated improvement in actual protections for workers and handlers.

- **§ 170.203 – Knowledge of Labeling Application-Specific and Establishment-Specific Information for Handlers (c)(3)**

This section should be deleted. See the comments for Section 170.201(c)(2) above. Again, any provision not specifically addressing protection of workers and handlers is not germane to WPS and should not be included in this proposed rule.

- **§ 170.205 – Requirements During Applications to Protect Handlers, Workers, and Other Persons (b)**

We do not support this addition to the WPS. Prohibitions on application to persons already exist. This addition does not add to protection against direct application or drift. We are not aware of any instance, and cannot envision any instance, in which applying to persons or allowing drift to persons is allowed under existing pesticide regulation.

The proposal also includes the term "other persons" which expands the scope of the WPS regulation. Further complicating the proposal is the use of the qualifier "untrained persons," which implies a need for the applicator to determine the level of training of a person entering a treated area. This provision

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complicates training and enforcement by creating an additional area the applicator must control and is responsible for in addition to the treated area. We believe this provision is unnecessary and adequate provisions protecting persons from direct application or drift currently exist.

- **§ 170.207 – Personal Protective Equipment (b)(5)(iii)**

The requirement for contaminated glove liners to be disposed of in accordance with federal, state, or local regulations should be deleted. If such disposal regulations actually exist, adding this provision in a WPS rule provides no additional protections or regulatory benefit; it merely allows for an additional technical violation. States and localities can address disposal requirements through state or locality specific regulations as appropriate.

Furthermore, the requirement for manufacturers of garment, hat, glove, apron, and footwear to test their materials against all pesticides is not feasible. Currently, manufacturers note in their marketing materials that the user must assess the garments, in particular, for the products and handling situations to assess for chemical-resistance. EPA needs to assess their "no measurable" threshold for both waterproof and chemical-resistant.

- **§ 170.207 – Personal Protective Equipment (d)(2)**

The reference to PPE disposal according to federal, state, or local regulations should be deleted. See comments above for Section 170.207(b)(5)(iii).

- **§ 170.209 – Handler Decontamination Supplies (d)(2)**

We support the proposed language of, "system capable of delivering at least 1.5 liters..." if it allows for the use of gravity fed or other water tanks with appropriate check valves to ensure pesticides are prevented from entering the system. Most mixing sites could have a substantial water supply in tanks that would not contain pesticides, similar to systems used on nurse tanks. We would support the use of natural water sources or any water in the event of the handlers being in a remote area with no vehicular access and no other water sources. We request EPA clarify what types of "running water" systems would meet the intent of this requirement.

- **§ 170.301 – Exemptions (a)(2)**

The reference to "other persons" should be deleted. See comments for Section 170.105 above, and we urge EPA to retain the current exemption for employees who are under the direct training and supervision of a licensed or certified crop advisor.

We are concerned EPA does not intend to extend the exemptions for certified crop advisors to workers trained and directly supervised by these professionals. Such workers are a vital part of the crop and research consulting business and implementation of Integrated Pest Management (IPM) programs. They are personally trained by certified or licensed crop advisors, made aware of the precautions required, and supervised as they conduct their duties. Under the current WPS rule, certified crop advisors must make specific determinations regarding the appropriate PPE, decontamination, and safe method of conduct for those working under their direct supervision. This information, as well as information regarding the product, method and time of application, REI tasks, and contact information, must be conveyed by the certified crop advisor to each person under their supervision.

Were the proposed rule to be promulgated, we urge EPA to retain the current exemption for employees who are under the direct training and supervision of a licensed or certified crop advisor.

- **§ 170.307 – Exceptions to Personal Protective Equipment Requirements Specified on Pesticide Product Labeling (d)(2) and (3)**

These sections should be deleted. They provide exhaustive design standard detail that is not readily amenable to compliance inspections by the Agency or SLAs. We recommend EPA consult with NASDA, AAPCO, SFIREG, and the regulated community to discuss the merits and challenges in developing a performance standard that requires the closed system be designed, maintained, and operated in a manner to ensure workers or handlers are not exposed to the pesticide therein. In addition, the reference to "any person" should be deleted.

Furthermore, we are concerned other subsections within this provision would create a federal requirement to ensure protections sufficient to fully "prevent heat-related illness" when workers are wearing PPE at such times. Avoiding such heat-related illnesses is important, especially for workers entering a treated area during an REI, but the incidence may be very dependent on climate changes and individual worker's sensitivities to heat stress. We recommend EPA acknowledge the degree of subjectivity in a manner that lessens the likelihood of unanticipated legal jeopardy for agricultural employers while still protecting workers entering treated areas during a restricted-entry interval.

- **§ 170.309 – Exception to Training Requirements for Workers**

Short of allowing the individual states to identify and implement an appropriate interval period (i.e. "grace period") reflective of the agricultural worker population and operations in their individual states that would permit employers to allow or direct a worker to perform certain tasks in a treated area on an agricultural establishment (not while any REI is in effect) before training the worker, we support a five day grace period.

VIII. Conclusion

We support updating and modernizing the WPS regulations to better reflect and incorporate the significant scientific and technological advances in pesticide regulation, new product developments, product applications, and agricultural operations that have occurred over the last twenty-two years, but we cannot support significant elements of the Agency's proposed changes to the WPS.

The scope and purpose of the WPS is a responsibility shared by employers and workers, and every effort should be made to enhance workers' understanding of their role in maintaining their safety and the safety of their families, improve their consistency of reporting, reduce worker errors, and avoid inadvertent misuse or WPS noncompliance.

Furthermore, we do not support the alternative scenarios the Agency considered in the preamble. We are confident the current WPS in tandem with the risk assessment process for individual pesticides is working well to protect farm workers and handlers. Instead of promulgating these proposed comprehensive revisions, we urge the agency to focus the necessary resources to work with state lead agencies and agricultural stakeholders to enhance the effectiveness of the current WPS.

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We contend any changes to the WPS rule should provide the state lead agencies increased flexibility in structuring and enforcing certain WPS provisions to better reflect the diversity of agricultural operations in their states. The states are better positioned to understand, provide, and inform an efficient and effective WPS regulatory framework that will prevent unreasonable adverse effects of pesticides among pesticide applicators, workers, handlers, the general public, and vulnerable groups while simultaneously minimizing the adverse economic impact the new proposals may have on small entities in their respective states.

We appreciate the opportunity to submit these comments. Please contact us if you have any questions or would like to discuss further.

Sincerely,

Stephen Haterius
Chief Executive Officer
NASDA

United States Department of Agriculture

TO: Ms. Samantha K. Dravis,
Regulatory Reform Officer and Associate Administrator, Office of Policy

FROM: Sheryl H. Kunickis, Ph.D. SHK
USDA, Office of Pest Management Policy

SUBJECT: USDA Points for Regulatory Reform Presented at the Pesticide Policy Dialogue Committee on May 4, 2017; EPA-HQ-OA-2017-0190-0042

- USDA supports revisions to the Worker Protection Standards including the designated representative provision, the application exclusion zone, and the definition of a "farm family" (as opposed to EPA's definition). EPA has a request from our partners at the National Association of State Departments of Agriculture (NASDA) and the American Farm Bureau Federation (AFBF) asking for a delay in implementing the Worker Protection Standards final rule. USDA supports the delay and would welcome the opportunity to work with EPA to revise the rule.

- USDA applauds EPA for reducing the burden associated with their Certification and Training rulemaking effort, which aims to increase certification and training requirements for certified applicators of restricted use pesticides. However, USDA is not confident that these new federal regulations will result in significant benefits in terms of reducing risks to applicators. It is clear though that the implementation of this rule will be costly for states, tribes, and other certifying entities as well as for applicators and farm owners. [Prior to posting this document in the docket, EPA announced a 12-month extension for implementation of the rule. USDA appreciates this action.]

- Endangered Species Act and Pesticides – USDA supports EPA stepping back from the current mammoth process that is being developed in order to reevaluate and forge a more reasonable path forward. USDA appreciates EPA's sincere efforts in the process, but the outcomes of the current interim approaches are troubling to the agricultural community. A more efficient process could provide regulatory certainty to ensure the continued safe use of pesticides, while offering necessary protections to endangered species and their habitat.

- USDA has voiced strong opinions regarding blanket proposals restricting tank mixes unless scientific evidence points otherwise. This will result in serious issues for growers and has the potential for a domino effect. If efficacy is impacted by the restrictions, we may see more resistance and subsequently, lower yields. The restrictions will increase the number of trips across the field -- affecting soil compaction, fuel use, safety for workers (tractors are the biggest risk), and potential for off-target impacts.

Office of Pest Management Policy
1400 Independence Avenue, S.W.
Washington, D.C. 20250-0314
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- USDA is very concerned that multiple alternative active ingredients (AIs) are being mitigated simultaneously, with benefits assessments for one AI assuming that an alternative AI will be available, even though that alternative AI is also being mitigated. We are unaware of examples of going back and un-mitigating a chemical, and thus, we could be left with resistance issues and fewer alternatives to combat weeds, insect pests, and diseases.

- Numerous stakeholders, some members of EPA's Scientific Advisory Panel, and USDA requested that EPA seek public comment and finalize their 2010 "Framework for Incorporating Human Epidemiologic & Incident Data in Risk Assessments for Pesticides" before using it in regulatory work. We learned it was posted without comment or notice in December 2016. Because epidemiologic studies can have an important role, we would like to understand how this framework will be used in regulatory decisions. If it is likely to alter EPA's analysis of epidemiological studies, to change what is required of registrants, or to be used as justification for any regulatory actions, we request that the Framework be subject to public review and comments. We would also like EPA to consider subjecting any risk assessments that relied on the draft Framework to re-review and additional public comment.

Message

From: Sands, Jeffrey [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B2AA28629ADE4AFB8D5EC12A8AAABA54-SANDS, JEFF]
Sent: 11/22/2017 2:14:34 PM
To: Beck, Nancy [beck.nancy@epa.gov]; Bennett, Tate [Bennett.Tate@epa.gov]; Baptist, Erik [baptist.erik@epa.gov]; Jackson, Ryan [jackson.ryan@epa.gov]
Subject: RE: Revised One-Pager
Attachments: Worker Protection Standard-CT_one pager.docx

INTERNAL STAFF DELIBERATIVE

All,

Attached please find edited one-pager. Erik, this is inclusive of your suggestions offered last night with the exception of Ex. 5 Deliberative Process (DP). Nancy can elaborate if needed.

Thanks

From: Beck, Nancy
Sent: Tuesday, November 21, 2017 7:08 PM
To: Sands, Jeffrey <sands.jeffrey@epa.gov>; Bennett, Tate <Bennett.Tate@epa.gov>; Baptist, Erik <baptist.erik@epa.gov>
Subject: RE: Revised One-Pager

INTERNAL STAFF DELIBERATIVE

Thanks Jeff—
This looks good. I have one suggestion in the attached to clarify.

Ex. 5 Deliberative Process (DP)

Make sense?

Nancy

Nancy B. Beck, Ph.D., DABT
Deputy Assistant Administrator, OCSPP
P: 202-564-1273
M: Ex. 6
beck.nancy@epa.gov

From: Sands, Jeffrey
Sent: Tuesday, November 21, 2017 3:53 PM
To: Beck, Nancy <Beck.Nancy@epa.gov>; Bennett, Tate <Bennett.Tate@epa.gov>; Baptist, Erik <baptist.erik@epa.gov>
Subject: Revised One-Pager

Hello all,

Please see revised one-pager from our meeting yesterday. I would appreciate your feedback as well as any details that have been missed here in approach, specific formatting/wording, or otherwise.

Jeffrey Sands
Senior Advisor to the Administrator for Agriculture Policy
1200 Pennsylvania Ave, NW
2415 WJC North
Washington, DC 20460
(202) 564-2263

Message

From: Sands, Jeffrey [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B2AA28629ADE4AFB8D5EC12A8AAABA54-SANDS, JEFF]
Sent: 11/21/2017 8:53:28 PM
To: Beck, Nancy [beck.nancy@epa.gov]; Bennett, Tate [Bennett.Tate@epa.gov]; Baptist, Erik [baptist.erik@epa.gov]
Subject: Revised One-Pager
Attachments: Worker Protection Standard-C&T_one pager.docx

Hello all,

Please see revised one-pager from our meeting yesterday. I would appreciate your feedback as well as any details that have been missed here in approach, specific formatting/wording, or otherwise.

Jeffrey Sands
Senior Advisor to the Administrator for Agriculture Policy
1200 Pennsylvania Ave, NW
2415 WJC North
Washington, DC 20460
(202) 564-2263

Message

From: Sands, Jeffrey [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B2AA28629ADE4AFB8D5EC12A8AAABA54-SANDS, JEFF]
Sent: 11/21/2017 7:33:49 PM
To: Subramanian, Hema [Subramanian.Hema@epa.gov]
Subject: Briefing Document
Attachments: WPS-CT briefing document template.docx

Jeffrey Sands
Senior Advisor to the Administrator for Agriculture Policy
1200 Pennsylvania Ave, NW
2415 WJC North
Washington, DC 20460
(202) 564-2263

Message

From: Sands, Jeffrey [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B2AA28629ADE4AFB8D5EC12A8AAABA54-SANDS, JEFF]
Sent: 11/21/2017 6:24:50 PM
To: Ford, Hayley [ford.hayley@epa.gov]; Dravis, Samantha [dravis.samantha@epa.gov]; Gunasekara, Mandy [Gunasekara.Mandy@epa.gov]; Bennett, Tate [Bennett.Tate@epa.gov]
CC: Hupp, Millan [hupp.millan@epa.gov]
Subject: RE: Meeting Request- National Corn Growers Association President

Hi all,

Just wanted to close the loop here. I have arranged to take the meeting with Kevin Skunes and NCGA on Decmember 8.

Thanks.

Best,
Jeff

From: Ford, Hayley
Sent: Tuesday, November 14, 2017 6:11 PM
To: Sands, Jeffrey <sands.jeffrey@epa.gov>; Dravis, Samantha <dravis.samantha@epa.gov>; Gunasekara, Mandy <Gunasekara.Mandy@epa.gov>; Bennett, Tate <Bennett.Tate@epa.gov>
Cc: Hupp, Millan <hupp.millan@epa.gov>
Subject: RE: Meeting Request- National Corn Growers Association President

Jeff – Do you want to respond directly to Colleen below and let her know that as the Administrator's Ag Advisor, you would be more than happy to meet with Kevin? Then you can let this group know when it's happening and if they should sit in.

Thanks!

Hayley Ford
Deputy White House Liaison and Personal Aide to the Administrator
Environmental Protection Agency
ford.hayley@epa.gov
Phone: 202-564-2022
Cell: Ex. 6

From: Sands, Jeffrey
Sent: Tuesday, November 14, 2017 6:01 PM
To: Ford, Hayley <ford.hayley@epa.gov>; Dravis, Samantha <dravis.samantha@epa.gov>; Gunasekara, Mandy <Gunasekara.Mandy@epa.gov>; Bennett, Tate <Bennett.Tate@epa.gov>
Cc: Hupp, Millan <hupp.millan@epa.gov>
Subject: RE: Meeting Request- National Corn Growers Association President

Thanks Haley.

Ex. 5 Deliberative Process (DP) I can meet with Kevin, NCGA, and would welcome anyone from this team to join.

From: Ford, Hayley
Sent: Tuesday, November 14, 2017 3:20 PM
To: Dravis, Samantha <dravis.samantha@epa.gov>; Gunasekara, Mandy <Gunasekara.Mandy@epa.gov>; Sands, Jeffrey <sands.jeffrey@epa.gov>; Bennett, Tate <Bennett.Tate@epa.gov>
Cc: Hupp, Millan <hupp.millan@epa.gov>
Subject: FW: Meeting Request- National Corn Growers Association President

Ex. 5 Deliberative Process (DP)

Let me know your thoughts. Thanks!

Hayley Ford
Deputy White House Liaison and Personal Aide to the Administrator
Environmental Protection Agency
ford.hayley@epa.gov
Phone: 202-564-2022
Cell: Ex. 6

From: Colleen Willard [mailto:willard@ncga.com]
Sent: Thursday, November 09, 2017 2:12 PM
To: Pruitt, Scott <Pruitt.Scott@epa.gov>
Subject: Meeting Request- National Corn Growers Association President

Good afternoon!

I am hoping to schedule a meeting for National Corn Growers Association President, Mr. Kevin Skunes, and Administrator Pruitt. Mr. Skunes is available after 10:00 am on December 7th and before noon on December 8th. Administrator Pruitt has indicated to Mr. Skunes his desire to meet, so please let me know if there is an agreeable date/time.

Best,
Colleen

Colleen M. Willard
Director, Public Policy
National Corn Growers Association
20 F Street NW, Suite 600
Ex. 6 Direct
willard@ncga.com

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Message

From: Sands, Jeffrey [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B2AA28629ADE4AFB8D5EC12A8AAABA54-SANDS, JEFF]
Sent: 11/21/2017 1:43:04 PM
To: Subramanian, Hema [Subramanian.Hema@epa.gov]
Subject: BIO
Attachments: Jeff Sands BIO.DOCX

Jeffrey Sands
Senior Advisor to the Administrator for Agriculture Policy
1200 Pennsylvania Ave, NW
2415 WJC North
Washington, DC 20460
(202) 564-2263

Jeff Sands is the Senior Advisor to the Administrator for Agriculture at the Environmental Protection Agency. Jeff comes to EPA most recently from Syngenta, where he served as Manager of Federal Government and Industry Relations. Before working at Syngenta, Sands was director of public policy for the Agricultural Retailers Association from 2012 to 2015. Jeff also has Capitol Hill experience, having helped handle agricultural issues as an aide to Rep. Tom Marino (R-Pa.).

Sands has a master's degree in public administration as well as a bachelor's degree in organizational communication from Valdosta State University. He also has a degree in environmental horticulture from Abraham Baldwin Agricultural College.

Message

From: Jackson, Ryan [jackson.ryan@epa.gov]
Sent: 10/20/2017 1:47:18 AM
To: Dravis, Samantha [dravis.samantha@epa.gov]; Bowman, Liz [Bowman.Liz@epa.gov]; Lyons, Troy [lyons.troy@epa.gov]; Gunasekara, Mandy [Gunasekara.Mandy@epa.gov]; Baptist, Erik [baptist.erik@epa.gov]; Minoli, Kevin [Minoli.Kevin@epa.gov]; Sands, Jeffrey [sands.jeffrey@epa.gov]
Subject: correspondence to the Hill
Attachments: 101917 EPA to Participants in Hill Meeting.pdf

All, the attached correspondence was transmitted and favorably accepted on the Hill tonight. EPW will markup a number of items including favorably reporting our nominees next week with a notice being issued tomorrow. Calendar numbers for the nominees and placement on the Executive Calendar will happen shortly following the markup. I sincerely appreciate all your contribution, time, phone calls, and efforts on this. Troy, I have emailed a copy of this to Richard and the EPW members offices. Please help me distribute this to the remaining offices represented on this letter.

Thank you.

Ryan.

Ryan Jackson
Chief of Staff
U.S. Environmental Protection Agency
Ex. 6

E. Scott Pruitt
Administrator

October 19, 2017

Senator Joni Ernst
111 Russell Senate Office Building
Washington, D.C. 20510

Senator Charles Grassley
135 Hart Senate Office Building
Washington, D.C. 20510

Senator Pat Roberts
109 Hart Senate Office Building
Washington, D.C. 20510

Senator John Thune
511 Dirksen Senate Office Building
Washington, D.C. 20510

Senator Deb Fischer
454 Russell Senate Office Building
Washington, D.C. 20510

Senator Mike Rounds
502 Hart Senate Office Building
Washington, D.C. 20510

Senator Ben Sasse
136 Russell Senate Office Building
Washington, D.C. 20510

Dear Senators Ernst, Grassley, Roberts, Thune, Fischer, Rounds, and Sasse,

My responsibility as Administrator of the Environmental Protection Agency (EPA) is to faithfully administer the laws passed by the U.S. Congress. This Agency must and will respect those laws. When it comes to the broad spectrum of environmental statutes the EPA is responsible for implementing, including the Renewable Fuel Standard (RFS), that is exactly what we have done.

The first RFS-related issue I encountered as Administrator was a pending petition requesting this Agency move the "point of obligation" from refiners and importers to blenders. After detailed analysis, numerous meetings with many stakeholders, and review of the over 18,000 comments received, the record demonstrates that granting that petition would not be appropriate. I have directed my staff to finalize this decision within 30 days.

Second, to provide stakeholders the certainty and predictability they need, EPA will meet the statutory deadline to issue a final Renewable Volume Obligation (RVO) rule by November 30, 2017. On July 21, 2017, EPA issued a proposed RVO rule that would require 19.24 billion gallons of biofuel to be blended into the nation's fuel supply. Of the 19.24 billion gallons, 15

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billion gallons would be met through the blending of conventional or corn-based ethanol and the remaining 4.24 billion gallons would be met by blending a combination of advanced biofuels, at least 238 million gallons of cellulosic biofuel, and at least 2.1 billion gallons of biomass-based diesel. While the process for determining the final RVO Rule is ongoing, it would not be appropriate for the Agency to prejudge the outcome of the rulemaking process. Nevertheless, preliminary analysis suggests that all of the final RVOs should be set at amounts that are equal to or greater than the proposed amounts, including at least 2.1 billion gallons for biomass-based diesel in 2018 and 2019.

Key members of Congress have advocated for a nationwide Reid Vapor Pressure (RVP) waiver for E15, and other midlevel ethanol blends, so that E15 may be sold throughout the entire year without disruption. Since becoming Administrator, I have directed EPA to actively explore whether it possesses the legal authority to issue such a waiver. The Agency would welcome the opportunity to work with Congress on this important issue, including issuing definitive analysis on the Agency's authority to issue a nationwide RVP waiver for E15.

Finally, the Agency has been discussing a range of ideas intended to stabilize RFS compliance costs. One of these ideas presented to EPA would involve amending our regulations to modify the treatment of Renewable Identification Numbers (RINs) associated with ethanol exports. EPA has not taken any formal action to propose this idea, nor will EPA pursue regulations.

I look forward to continuing to engage in constructive and meaningful dialogue on these and other RFS-related issues. I reiterate my commitment to you and your constituents to act consistent with the text and spirit of the RFS. I take seriously my responsibility to do so in an open and transparent manner that advances the full potential of this program as envisioned by Congress, rural America, and the President of the United States.

Sincerely,

E. Scott Pruitt