Welcoming Remarks

Chris Robbins (ORD): Thank you to the states for taking time out of your busy schedules to visit with us. We look forward to learning more about the environmental issues states are confronting and receive feedback on how ORD's research, tools and methods can more effectively support states' efforts to protect the environment. Special thanks to Ohio EPA Director Craig Butler for co-hosting today's event.

Craig Butler (Ohio EPA): Excited to have other states visit EPA Cincinnati. Great collaboration between Ohio and ORD, especially this EPA Cincinnati facility, over the years.

Ken Wagner (EPA Office of the Administrator): This is his third ORD-states meeting. Sees ORD as a problem solving place - how we can work together to solve environmental problems. Wants to make EPA research more accessible to states and the public.

States' Perspectives/Topics of Interest

Indiana DEM – Bruno Pigott, Commissioner

- **Lead (Pb)** is a top concern. Governor wants to take a more aggressive, proactive approach in sites across the state.

- East Chicago Superfund site: Lead in soils is an issue. From a science and risk management perspective – lots of challenges. People see a Superfund site and get frightened about whether their drinking water (DW) is safe. The Lead and Copper rule is a big deal for all of us. Need to be proactive without frightening residents. [IN] welcomes ORD's help in this area. There are a number of Pb sites in the state. There's an area with Pb 1 ½ miles from a Superfund site. Communication, science and regulatory structure.

- Nutrients: Everyone is fighting harmful algal blooms (HABs), issue in the Midwest. Measuring and predicting algal toxins. Sampling regime doesn't help predict what will happen. Cannot tell if recreation is an issue. **Need prediction capability**.

- **Beneficial** reuse: Getting pushed to do this. **Needs guidance** on how to proceed.

- **Silver bullet waste water treatment technology**: Small communities are susceptible to vendors who claim to be able to solve all problems. Sometimes state is good at evaluating this, but there are things they don't know. Need to be able to provide advice.

- **CSO discharge**: Mayors are saying it's too expensive. They want us to change our standards. Is there a less expensive technology that will get them to the desired results? Asking for a Consent Decree amendment. Needs more effective wastewater treatment for communities. Action: ORD (NRMRL and Lisa Matthews) send information on our green infrastructure work in Omaha, NE.

→ Ed Chu (Region 5): All of the EPA regions have been assigned lead region responsibilities. Region 5 is the lead region for water. Region 4 is the lead region for ORD/research; it might help states to know how EPA's Office of Water (OW) sets priorities.

→ Suzanne van Drunik (SSWR): Meets with OW. Research planning is very engaged process. OW looks at competing priorities and provides ORD with input. Will send out OW's list of priorities in the spring for regional and state comments. Nutrients is a huge topic.

→ Jennifer Orme-Zavaleta (ORD): Staff exchange is a great idea. State scientists came to visit EPA labs, or reciprocate with ORD staff working short-term in a state.

→ Fred Hauchman (ORD/OSP): Mentioned having a more formal engagement with states as part of ORD's Regional Science Program.

- Regional-ORD Community of Science Networking (ROCS-Net), an ORD orientation and networking program: Gave a heads up about the pilot program to bring EPA regional and state scientists together (1 regional and 1 state scientist from each EPA region) to visit ORD's EPA Cincinnati laboratory in May 2018, and discuss collaborative research opportunities, regional priorities and cross-cutting issues with ORD scientists. States should look for announcement to come in next few weeks from your RA or DRA.

Michigan DEQ – Kathy Shirey, Director, Remediation and Redevelopment Division

- **Lead (Pb)** issues same as Indiana, and Per- and Polyfluoroalkyl Substances (**PFAS**) to the same degree. Need to know what levels we can say are safe. Need for interdisciplinary work. Toxicologists, environmental scientists and way to communicate. Fear in the community and some degree of attention is not helpful. Science needs to be integrated into context and communicated. Look at remediation techniques for **emerging contaminants**. Pilot research is helpful.

- **Infrastructure**: Any research into how to improve [it] would be helpful. Grant funds for communities received. It's expensive. Encourages states to learn from each other.

- Fate and transport, vapor intrusion, VI calculator based on soil type was developed by MI. Developed new rules/criteria for environmental cleanup. Wants to know how others are looking at this to understand pathway of concern.

Michigan DEQ – Kirby Shane, Lab Director

- MI state lab currently does not analyze **PFAS**. Developing that capability now. Michigan's HHS and DNR now integrating more. Building a consolidated lab for four Michigan agencies. Looking at PFAS methods, especially non-drinking water. ACTION: ORD (Lisa Matthews with Chris Impellitteri) to provide state information on EPA's PFAS methods workgroup and timelines.

Ohio EPA – Craig Butler, Director

(Refer to background papers shared by Ohio EPA prior to the meeting.)

- Failing and aging **drinking water infrastructure** is not unique to any state. When is water safe to drink again after water main breaks? How do we more rapidly get back to normal? Seems like a small issue, but communication is key. Need a better, quicker way.

- **HABs, PFAS, Vapor Intrusion**: Methods and limits have changed. Looking at thousands of sites across OH for TCE and PCE. Institutional Controls in facilities – need to make sure they are working. Is modeling still accurate? Long term management.

- Craig Butler teaches a strategic management class – talking about high level research. Erosion of public trust is a problem and instantaneous information on social media is a challenge. Expectations for zero risk and rapid results. Research that takes a long time looks like slow moving bureaucracy. Heightened sense of urgency. How to communicate to the public – *here's what we know so far but we don't have all the answers.* Adaptive management. Thinks public is willing to accept this. Need to think about **how we communicate risks to the public**.

- Great collaboration between Ohio and ORD, especially this EPA Cincinnati facility. Also great affiliations with Ohio State and Bowling Green universities, as well as Battelle. ERIS is another organization that Chris Jones is involved with. ACTION: Ohio EPA to connect these organizations with ORD. Bring them all together as a community of science.

- Government in any form is not the trusted entity – ORD can be the third party validator.

→ Ken Wagner (EPA): Build public trust – create joint messaging. Example Hurricane Harvey, when EPA imbedded staff in the area.

→ Ed Chu (R5): **Communication piece is crucial**. Need to get all of us on the same page. Other federal and state agencies too.

Chris Jones (ERIS Board Member): Challenge in knowing what research is available. **Need to make research more accessible.**

Craig Butler (Ohio EPA): **Maybe states need a space to talk about research needs**. Most states do not have a research lab. ORD could help fill a big gap. ACTION: Find time for a focused discussion about state research needs (ECOS and Lisa Matthews to follow-up). Jennifer Orme-Zavaleta (ORD): Suggested it may be more helpful for states to identify the big problems they are facing – rather than trying to come up with a list of research needs. What are the big problems keeping state directors awake at night? Start the research conversation.

Ohio EPA – Russ Brown and Bonnie Buthker, Southwest District Office

- Region 5 is industrial and has lots of **landfills** - subtitle D. No longer have "mom and pop" landfills. They have mega landfills. Concentrated landfills, concentrated problems. Research is coming from industry, and they are controlling the message. Importance of solid waste issues.

SW Ohio has all the issues mentioned plus there are great partnerships between communities, utilities, and Region 5 and ORD.

West Virginia – Scott Mandirola, Deputy Cabinet Secretary

- **HABs** took WV by surprise. WV didn't have ability to analyze; thanked Ohio EPA for their help to analyze samples during the HAB outbreak on the Ohio River. WV provided the helicopter.

- Biggest issue is **PFAS**. In one major location, WV is seeing PFAS in the C8 form (eight carbon) from air deposition. Required to capture 99%. Needs to coordinate more with OH. Reissuing Washington Works air permit. Gen X is emerging issue. Required to capture 99%, but the one percent is enough to show up from air deposition. EPA has health advisory level of 70 ppt but it's confusing for regulatory purposes. i.e. NPDES. Companies appeal that. ECOS is talking to EPA's Office of Water about a toxicity value versus a health advisory level. WV conversations with Ohio – need more information sharing. City of Vienna, WV shut down well overnight over 70 ppt. Need to do better job with these numbers. WV wants to talk to ORD about NC's health goal for GenX (140 ppt). NC number is being peer reviewed. ACTION: ORD (Jennifer Orme-Zavaleta and Lisa Matthews) to connect WV with ORD's John Vandenberg who is on NC's Science Advisory Board to advise on emerging chemicals.

- Cost effective rural sewage treatment: Mine pool water in southern WV (Ashland) can be very clean. Median household income is very low and can't afford new sewage treatment plant ($36M). Great recreational potential in these areas of WV. Non-conventional sewage treatment plan and recreation has changed economy. Bank won't lend money unless there is sewage treatment. Landscape not conducive to septic systems. Use holding tanks to settle solids and pump liquids uphill to wetlands. Pump out solids every 6-12 months.

  → **Need innovative low cost technologies for rural sewage treatment**. Potential for tourism since coal is declining.

Wisconsin DNR – Bill Phelps and Matt Diebel

- 50% on groundwater (GW) and 50% on DW. Some HABs issues, lead service lines in Milwaukee. Naturally occurring contaminants Strontium, Molybdenum, smaller systems drawing out of shallow aquifers, nitrate and agricultural chemicals. New herbicides and degradation products. **Neonicotinoids** in GW could be an issue, **bacterial issues** in karst and animal waste. CAFO and animal waste disposal. Virus research in groundwater in WI agriculture department – PCR technique, low level hits. Could use help with **viral genome interpretation**.

- PFAS at military sites. Paper manufacturing and land spreading of PFAS treated paper.

- GW recharge back to aquifer – they have experience with small systems quasi recharge systems.

- Surface water quality – numeric phosphorus criteria adopted in 2010. Implementing TMDLs – over 50% of state under a **phosphorus TMDL**. Implementing NPDES controls for phosphorus is a persistent challenge.

- **HABs** are a new challenge for WI that's on the public's radar. Prediction and knowing health risks are challenges.

- Good work with ORD on beach water quality and models (Virtual Beach). Could use more help in **microbial source tracking**.

- Filamentous algae in Lake Michigan is increasing – Why? How to manage?

State Perspectives to tee up Science Topics

Drinking Water – Bruno Pigott, Indiana DEM

East Chicago: Did digging around lead soils disturb pipes and produce lead in DW? Region 5 did a pilot study. Eighteen homes exceeding lead action level; however, under the Lead and Copper rule, the community was in compliance. Erosion of public trust. Filters and lead service line replacement. Extensive sampling, yet despite all the work, residents don't trust. Conflicting results – EPA, Indiana DEM and Mayor were not on same page. Public interest groups raise concern levels further. Big effort to rebuild public trust. Lots of lead sites in Indiana. ORD can be helpful in providing methods etc. Different approach was from home to street but not consistent with Lead and Copper rule. Changing out lead service lines is a long-term project.

Jennifer Orme-Zavaleta noted that EPA put forward aging water infrastructure as one of the agency's top priorities to the National Science and Technology Council.

A more proactive, unified approach to Superfund site assessment is needed – might help reassure the public. Team approach. Method and sample evaluation – need to get on same page. Lead and Superfund issues are high profile issues in Indiana.

Algal Blooms – Craig Butler, Ohio EPA

Ohio is running as fast as we can on HABs. Revised rules requirement for advanced monitoring and treatment requirements – 5500 public water systems were flying blind. Had no monitoring in surface water. Too late to catch up if you don't know what's coming into system. Provided funds to water system treatment plans to buy ELISA tests and new monitoring technology. Leaned on EPA ORD and worked with many ORD researchers. 30% of Ohio gets water from Lake Erie, plus lots of other surface water systems. Rules – Update public water system response. Beach guard website. Sampling May-October. Always lagging can't do it in real time yet. Asked EPA, Michigan others to come together and use satellite imagery for real time analysis. Answers impairment and recreational issues in Lake Erie. Fish tissue advisory related to HABS? Ag nutrients – lime softening – does residual HABS carry over into material for bio-solids and soil augmentation? Irrigation with HABs waste – it can be taken up into the plant. Working with universities for short term responses to help state deal with the problem.

→ If your state is interested in testing the Cyanobacteria Assessment Network (CyAN) mobile app that uses satellite data to map the location of HABs in fresh and coastal waters across the US, contact: Blake Schaeffer, EPA ORD (schaeffer.blake@epa.gov or 919-541-5571).

Innovations in Water Quality Monitoring – Bill Phelps and Matt Diebel, Wisconsin DNR

Primarily a groundwater issue. Industrial animal waste. Using PCR. Not getting total coliform but getting low level viruses, ubiquitous genetic material in aquifers. Surface waters – bacterial TMDL for Milwaukee River. **Source tracking will be key tools. Need advice on how to use tool**. Using beach forecasting at Great Lakes beaches.

Hot Landfills – Craig Butler, Ohio EPA

They are currently seeing a number of hot landfills in Ohio, and they are probably in other states as well. Some have discernable causes (aluminum dross) and others do not. When landfill is hot, it loses the capacity to produce methane which is a revenue stream. Landfill also subsides. Terrible odor problem. Large operations have the resources to solve the problem but what about others? **What kinds of remedies does ORD have?**

Wrap-Up

Chris Robbins (ORD): Do the products ORD delivers meet our customers' needs? Usability and quality – what advice or suggestions do states have?

Wisconsin: Important of having good training materials that are user friendly.

Chris Robbins: We want to continue to have these meetings, want them to be helpful for states. Goal to make EPA research more accessible to states. We need to do a better job of telling our story, so states and the public can leverage EPA research more. We want to meet Agency needs as well as state science needs. Importance of 2-way communication:

- States better inform what we do
- States inform our Strategic Research Action Plan updates – planning series of teleconferences with ECOS media committees and national state associations this spring on specific science needs
- Importance of states responding to ERIS states' survey of state research needs – feeds into EPA's research planning

Jennifer Orme-Zavaleta (ORD): Discussed frequency of these types of meetings. ACTION: Encouraged states to continue the dialogue – please email Lisa Matthews, ORD State Liaison (matthews.lisa@epa.gov). We can also schedule more frequent teleconferences to report out on progress, other things to follow-up on.

Bruno Pigott (Indiana DEM): Very valuable for Indiana to be here. One of the most valuable things EPA can do is to develop research and tools. ACTION: Arrange a follow-up visit for Indiana DEM staff to visit the lab (Lisa Matthews can coordinate).

Craig Butler: It's important for states to talk about research. We get 'fabulous' value from EPA research, and connections with the Ohio River Valley Water Sanitation Commission (ORSANCO) and other research institutions – so much value here. Importance of building research networks. Encourage more informal discussion on environmental challenges/problems facing states.