
U.S. Environmental Protection Agency
DRINKING WATER STRATEGY – CONTAMINANTS AS A GROUP PROCESS

*US EPA East Room 1153
1201 Constitution Ave. N.W.
Washington, DC 20460*

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DRAFT MEETING SUMMARY

I. Welcome, Introduction, Meeting Objectives and Agenda

Gail Bingham, the facilitator from RESOLVE, opened the meeting and welcomed the meeting participants. She briefly reviewed the meeting materials, the objectives, and the agenda.

II. Overview of the Drinking Water Strategy and EPA Outreach Activities

Pam Barr, Director of the Standards and Risk Management Division, Office of Groundwater and Drinking Water, added her welcome and appreciation to participants for attending, and provided an overview of the Drinking Water Strategy. ¹ Ms. Barr's presentation reviewed the four components of the drinking water strategy: addressing contaminants as groups rather than one at a time, fostering development of new drinking water treatment technologies, using the authority of multiple statutes to help protect drinking water, and partnering with states to share more complete monitoring data from public water systems. She also reviewed EPA's outreach efforts including outreach planning, listening sessions, a consultation with the National Drinking Water Advisory Council (NDWAC), and a web dialogue. She concluded by providing an overview of stakeholder feedback that has been generated from these outreach activities.

III. State Perspectives on Regulating Contaminants as Groups

Two state representatives discussed what their states are doing with respect to contaminant grouping, and what lessons they have learned.

Sam Perry, Water Treatment Engineer for the State of Washington Office of Drinking Water, presented a state regulatory perspective on contaminants as groups. ² Mr. Perry, using some examples such as algal toxins, discussed a number of factors that he recommended be considered when grouping contaminants for regulatory purposes. The considerations he suggested include: analyze approaches for regulating contaminants as a group in other other countries/states; do the contaminants occur together; can the contaminants be analyzed together; do the contaminants have common health endpoints; what is the state of knowledge about treatment efficacy; and ensure waivers be provided for low risk sources.

Lloyd Wilson, Bureau of Water Supply Protection, Center for Environmental Health of the New York State Department of Health, presented a review of New York State drinking water standards for organic chemicals. Mr. Wilson's presentation reviewed background about federal standards, but more specifically focused on the

¹ The presentation can be found online at <http://water.epa.gov/lawsregs/rulesregs/sdwa/dwstrategy/index.cfm>.

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New York State standards for (Specific Organic Chemicals (SOC), Principle Organic Contaminants (POC) and Unspecified Organic Chemicals (UOC)), including the authority and basis for the standards.³

Following Mr. Perry and Mr. Wilson's presentations, participants asked clarifying questions. Their responses are summarized below.

New York and Washington State Standards:

- NY: POCs do not represent carcinogens; 10% of the UOCs are carcinogenic.
- NY: Compliance with the 5 micrograms per liter (ug/L) (POC) and 50 ug/L (UOC) is based on analytical protocols filed under the federal regime, with a few other methods included.
- NY: With regard to the slide indicating that one third of systems tested had values below 50 ug/L, only vulnerable systems were selected for testing.
- WA: Under the Unregulated Contaminant Monitoring Rule (UCMR), paired samples – one before and one after treatment – should be taken, which would result in both more complete occurrence data and information on the efficacy of any existing treatment.

Waivers:

- NY: The waiver process assesses source water quality primarily based on coliform data and local knowledge, and time-period monitoring. In addition to a waiver for source water issues, there also is a waiver for best available technology based on feasibility and treatment considerations.
- WA: Waiver criteria for high quality source water are based on characteristics including: production, depth of open interval, number of bedrock/groundwater layers, water quality history, construction and land use data, available land use data water quality history, and pesticide application maps. Utilities fill out a roughly 10-page waiver application to help regulators determine the vulnerability of the source water. The timeframe for the waiver is built into the protocols.

Suggestions for Federal Standards:

- Make sure existing low risk sources can qualify for waivers without additional sampling.
- Give states some flexibility since conditions differ state to state.
- In deciding contaminant groups, start with the four factors (health effects, treatment, analytical methods, and co-occurrence), and then do a distribution analysis to look at different populations and groups.
- Ensure there is robustness to the standard that provides a way to make a chemical specific change if needed (for example, when there are relatively similar chemicals with very different toxicity.)

Other issues

- Create national framework for membrane filtration approvals to avoid duplication of efforts by States and equipment manufacturers.

IV. Objectives, Principles, and Technical Analyses from Exploring Contaminant Groups Concepts

Chad Seidel, Damon S. Williams Associates, shared initial findings from research activities sponsored by the American Water Works Association (AWWA) evaluating the potential for regulating contaminants as groups.⁴ He reviewed overarching observations and key principles identified during an expert workshop. Mr. Seidel also shared exploratory research examining the pros and cons of different approaches for regulating contaminants as a group.

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Following Mr. Seidel's presentation, participants asked questions about AWWA-sponsored research and available treatment technologies. During the conversation, Mr. Seidel and experts from the audience made the following comments:

- The expert panel did not prioritize contaminant groups for regulation. The work on nitrosamines began as an outcome of the Contaminant Candidate List (CCL) and the six-year review process.
- The costs presented for the treatment technologies do not include societal and environmental costs. As you move from disinfection to filtration to more advanced technologies, the energy consumption and carbon footprint increases. These factors should be weighed heavily when implementing a new approach to regulating contaminants.
- When managing a group of air strippable contaminants, the design of the air stripper is based on achieving required levels of removal for the least easily removed contaminant present in the influent water.
- When managing a group of adsorbable contaminants the design of GAC contactors is based upon achieving required levels of removal for the least easily adsorbed contaminant present in the influent water.
- Academic and research communities are investing in trying to predict removal of compounds using Quantitative Structure Activity Relationships (QSARs). A key driver to the research is applying it in the context of other water quality conditions that influence treatment.
- It is rare to find detectable levels of the nitrosamines as a group of contaminants (e.g., NDMA, NDEA, NPYR, NDBA, NMEA, and NDPA) without finding N-nitrosodimethylamine (NDMA), so it is possible to just test for NDMA rather than doing the full panel.
- Health reference levels for nitrosamines are in the single digit nanogram-per-liter health reference levels, suggesting that the threshold for regulatory action might be lower than the thresholds for currently regulated contaminants which are in the milligram or microgram-per-liter range.
- It is difficult to interpret the UCMR2 data with respect to the correlation between disinfection practice and observed NDMA occurrence because 15% of the UCMR2 observations reported their disinfection practice as "unknown."
- For regulatory purposes, it would be important to understand whether there are utilities that use chloramines and do not have concentrations of nitrosamines. It also would be helpful to identify criteria for reduced monitoring.

During the discussion it was noted that before national standards for contaminant groups are promulgated, it is important that field testing be done that shows that a particular technology works in removing those contaminant groups. The Safe Drinking Water Act (SDWA) should include language about the field-tested technology.

V. EPA's Perspective on Potential Groups and Approach Framework

Eric Burneson, Chief, Targeting and Analysis Branch; and Wynne Miller, Chief of the Standards and Risk Reduction Branch presented findings⁵ from the recent EPA discussion paper, "*Paradigm for Addressing Drinking Water Contaminants as Groups to Enhance Public Health Protection.*"⁶ The goal of the presentation was to discuss and solicit input on potential contaminant group(s) for EPA to consider for regulatory action, and the approaches for addressing contaminant groups. Ms. Miller discussed statutory requirements for drinking water regulatory processes through SDWA, and opportunities within those requirements to propose new regulations addressing contaminants as groups. Mr. Burneson discussed factors for consideration when identifying and defining contaminant groups. He also shared EPA's ideas for potential contaminant groups for regulations in the near-term and far-term.

⁵ The presentation can be found online at <http://water.epa.gov/lawsregs/rulesregs/sdwa/dwstrategy/index.cfm>.

⁶ This paper can be found at <http://water.epa.gov/lawsregs/rulesregs/sdwa/dwstrategy/index.cfm>.

Following Mr. Burneson and Ms. Miller's presentations, participants had an opportunity to ask clarifying questions. Their responses are summarized below.

Regulatory Approaches:

- For the Relative Potency Factor (RPF) approach to regulating contaminants as groups, the contaminant group would be comprised of compounds with common health endpoints; the risk of the group would be determined by the compound in the group with the most thoroughly evaluated adverse health effects.
- Both the Hazard Index (HI) and the RPF are novel approaches for drinking water regulation; the Summation of Cancer Risks and the Treatment Barrier approaches have been used before.
- The RPF method has been used under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) and the Toxic Substance Control Act (TSCA). Although the Office of General Counsel has not done a rigorous analysis of the RPF approach, the belief is that it is consistent SDWA requirements.
- The maximum contaminant level goal (MCLG) will be zero for carcinogenic compounds. For the HI and RPF approaches, there are threshold levels that could be used as a basis for comparison for a MCLG. The Treatment Barrier approach with non-carcinogenic threshold contaminants represents more of a challenge in setting the MCLG.

Contaminant Groups:

- For the carcinogenic Volatile Organic Compounds (VOCs) group, the list of contaminants will be identified in advance. The regulatory structure will have to be a dynamic process so that new contaminants could be added to the list.
- The Chlorinated Disinfection By-Products (DPBs) group also includes bromated contaminants.

Process:

- Ms. Miller explained the expected timeline for regulating contaminant groups. She noted that EPA has identified three contaminant groups for near-term consideration and three contaminant groups for the far term. She indicated that EPA will propose one contaminant group for regulation this fall. For the far term, there will be several opportunities in the SDWA process to address contaminants as groups: the UCMR3 in 2013, the CCL4 in 2014, and the six-year review (these dates are the latest in which action could be taken). Other groups will require more data collection before they can be placed in the regulatory cycle. The Office of Ground Water and Drinking Water (OGWDW) can also make off-cycle decisions.
- The process for public review will include the required public comment period for proposed regulation. OGWDW usually holds stakeholder forums in advance of publishing a proposed rule to present information and gather input. The Agency also will consult the NDWAC in early December and the Science Advisory Board sometime this fall. Both these meetings are public meetings.

VI. Interactive Panel and Open Forum: Options and Issues for Regulating Contaminants as Groups

Gail Bingham, the facilitator from RESOLVE, opened the panel discussion and reviewed ground rules. She proposed three themes for discussion: EPA's approach to addressing contaminant groups, the pros and cons of proposed contaminant groups, and questions and concerns for implementing contaminant group regulations. Panelists initiated the discussion, and then Ms. Bingham opened each question for audience discussion.

Approach for Addressing Contaminant Groups

Panel members and other participants expressed general support for grouping contaminants for regulation citing that individual contaminant regulation has become cumbersome. They noted that the bar for deciding to regulate an individual contaminant is high; regulating by groups, especially if treatment and other programs can reduce their occurrence, could reduce costs and lower the bar. Participants also pointed out that grouping contaminants should be considered in the context of the other three initiatives in the four-point drinking water strategy put forth by the Administrator. It is possible that these three initiatives will offer better solutions than addressing contaminants by groups.

Many participants expressed support for the approach of grouping contaminants by examining health effects and occurrence, as this provides the best justification for regulation. Some noted that health effects and occurrence information will point to whether a group of contaminants should be regulated, whereas the treatment and analytical methods information will speak to what can be done about the contaminants.

Participants discussed the challenge of getting data about the occurrence of contaminant groups. They noted the importance of looking at non-traditional sources, for example data from the Centers for Disease Control, including NHANES (National Health and Nutrition Examination Survey) and the U.S. Geological Survey. One participant suggested convening a number of stakeholders to work through the data and develop a level of confidence that the data represents a close proximity of reality. In response to a question about occurrence data, EPA representatives stated that in the traditional approach to regulation, EPA does not make the assumption that all members of a family of contaminants are present even if not detected. The Agency has used pesticide modeling to list contaminants; other data such as NHANES has been helpful in some situations.

During the discussion, several participants suggested that source water control – preventing pollution at the source - should be the root of any drinking water strategy. It is important to look at where, beyond the drinking water program, there is statutory authority to go further than the traditional sourcing controls (such as, planning and zoning) and address the products that are ending up in our water supply. EPA representatives acknowledged that regulation is not the only tool available for addressing contaminants. Source water control, which is more complicated and will require more collaborative approaches, could help to address contaminant groups when regulation is not the best option.

EPA representatives explained that the Agency has considered the approach - similar to the Dutch approach – of looking toward tight control of source water and tight control of distribution systems, so that there is not a need for treatment controls. One of the challenges to implementing this approach is prohibitive costs for small systems.

Pros and Cons of Contaminant Groups

Panelists and other participants made a few specific comments about the three proposed contaminant groups.

Carcinogenic VOCs:

Several participants expressed support for the proposed contaminant group of carcinogenic VOCs. They noted additional benefits of treating for carcinogenic VOCs such as removal of other organic carbons. The public is likely to be very receptive to regulating this group.

Chlorinated DBPs:

There also was significant support for regulating chlorinated DBPs as a group. Participants did note that small systems are not yet required to comply with the Stage 2 DBP Rule. With this grouping, small systems would have to change their approach to managing compliance, which would affect their technical, financial and managerial capacities. The suggestion was made that EPA consider implementing additional

requirements for DBPs, so that utilities can make improvements beyond what is required in Stage 2 DBP Rule.

Nitrosamines:

A question was raised as to whether regulating nitrosamines as a group provided a meaningful opportunity for risk reduction and positive effect on public health; nitrosamines may be more of a concern in food than in drinking water.

Additional Proposed Contaminant Groups:

Participants suggested contaminant groups that EPA did not prioritize for regulation, including:

- Triazines, other chlorinated compounds, and perfluorinated compounds – from the perspective of persistence, bioaccumulation, and toxicity
- Endocrine disrupters - more difficult to identify but they have permanent and debilitating health impacts at low exposure levels
- Pharmaceuticals and Personal Care Products (PPCPs) – because of the opportunity to address through the Clean Water Act (CWA) and wastewater treatment

Feedback on one suggested priority:

Participants also discussed whether regulating cyanotoxins as a group should be a priority. One noted an increase in cyanotoxin contamination. Another pointed out that cyanotoxins are broken down and treated by chlorination.

Questions and Concerns for Implementing Contaminant Group Regulations

In response to comments about implementation considerations, EPA representative explained that the Agency is focusing first on determining if contaminants can be addressed as groups, identifying those groups, and deciding if those groups can be regulated. From the Agency's perspective, grouping contaminants by health effect endpoint offers a meaningful opportunity to reduce adverse health effects. Once the groups are decided, implementation considerations, especially those for small systems, will be addressed. EPA will look at programs for optimizing treatment. The Agency is already on this path with Long Term 2 Enhanced Surface Water Treatment Rule (LT2) and Stage 2 DBP Rule.

Communications:

When discussing challenges for implementing contaminant group regulations, participants identified concerns that EPA should take into account when communicating regulations. Given the Administrator's emphasis on building public and consumer confidence, they noted a need to address existing misconceptions about contaminant risks. The public understands and is more outraged about PPCPs than, DPBs, carcinogenic VOCs, or nitrosamines. Participants also stressed that it is important to communicate (including through web dialogues and health advisories) why a group (or groups) was chosen for regulation and why other groups were not. It will be important to clearly define the scientific basis for developing groups. Finally, it was noted that EPA will do a great service to the whole drinking water community if it explains to the public that drinking water will not be contaminant free, that "pure" water is not necessarily desirable.

Resources:

A participant noted several concerns regarding the resources necessary to implement the regulation of contaminants as groups. Small systems always struggle to manage their resources; they are still waiting for resources for 6-10 year old regulations. The challenge is to help these systems make decisions about how to invest the resources they have. Participants indicated that operators would likely choose to spend resources on complying with regulations instead of regular maintenance, such as tank repairs. States resources are already very tight and waivers create a huge financial burden. EPA regional offices also need resources for implementing the regulations with tribal entities; these tribal groups also need waivers.

Other Implementation Considerations:

Participants offered several other comments and suggestions regarding implementation of contaminant groups:

- It is important to coordinate with other Acts (SDWA, FIFRA, TSCA reform)
- Be aware of unintended consequences in implementing these regulations. Every time a process is tweaked in one place, it affects everything down the line. It is critical to check and recheck several times to be sure there are no consequences.
- Regulating contaminants makes it even more critical to test out how the regulation and waivers will work before there are any considerations for installing treatment technologies. A simple and efficient waiver process will assist small systems in complying with new drinking water regulations.
- States need flexibility because there is so much variation in the systems they oversee. They also need flexibility with regard to monitoring schedules.
- If EPA moves to regulating contaminants as groups then operators should be required to monitor those contaminants as groups, which would significantly reduce monitoring costs.
- It is important to consider if there is anything that can be done within the drinking water strategy to keep contaminants out of the water in the first place.
- In addition to taking action on groups of contaminants, take care to pay attention to serious problems with individual contaminants.

VII. Wrap Up and Next Steps

EPA representatives thanked participants for joining in the discussion, and contributing valuable feedback. The next step is to bring forward to the Administrator suggestions for what will be the first group or groups of contaminants. Following that, EPA will be proposing the UCMR 3. The Agency will be working with those involved with FIFRA, CWA and TSCA reform, to gather information. The Office of Research and Development is working on the technology principle of the Drinking Water Strategy in collaboration with academia and industry. EPA will look to tackle the challenge of gathering occurrence data.

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