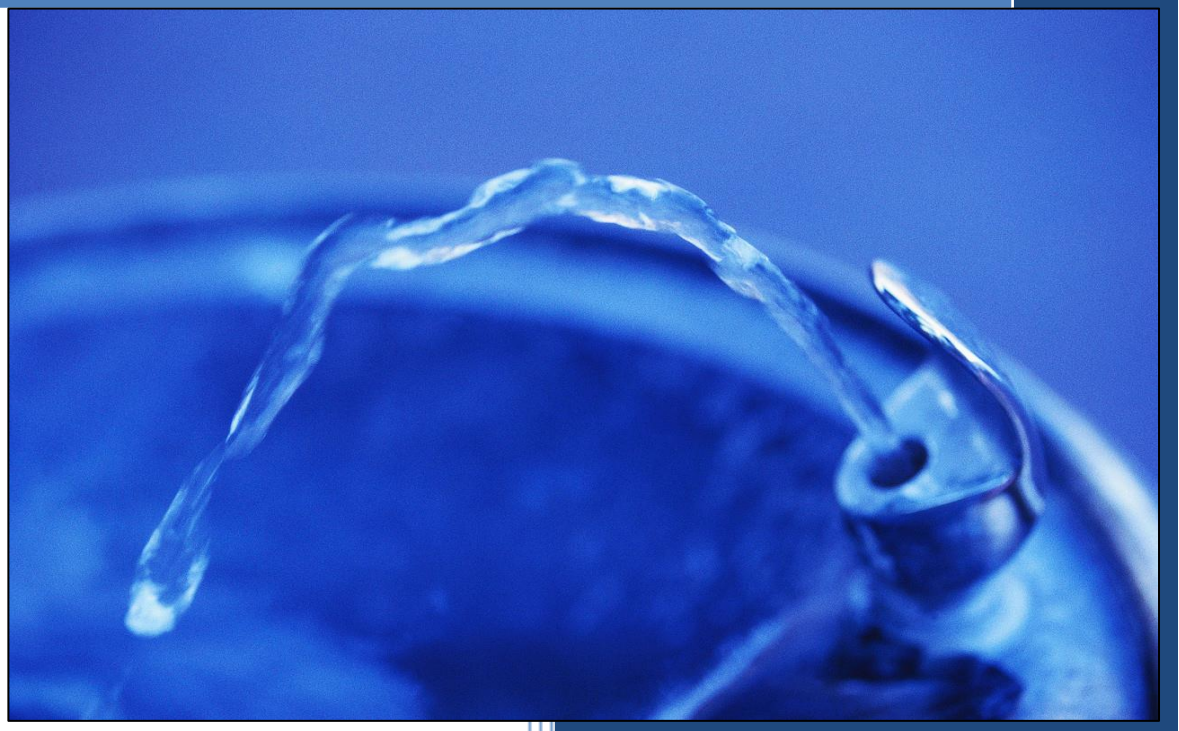
National Drinking Water Advisory Council Meeting Summary, October 4-5, 2012



Prepared for:
United States Environmental Protection Agency
Office of Ground Water and Drinking Water
1201 Constitution Avenue, NW
Washington, D.C. 20004

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Executive Summary

I. BACKGROUND

The National Drinking Water Advisory Council (NDWAC), comprised of members of the general public, state and local agencies, and private groups concerned with safe drinking water, is a Federal Advisory Committee that supports EPA in performing its duties and responsibilities related to functions, policies, and regulations required by the Safe Drinking Water Act. Customarily, the Council has two face-to-face meetings each year in the Spring and Fall months to discuss any outstanding issues.

This report summarizes the two-day National Drinking Water Council Meeting held October 4 and 5, 2012 in Chicago, Illinois. The main purpose of the meeting was to consult on the proposed perchlorate regulation. In addition to the proposed perchlorate regulation, other issues discussed by the council included the Office of Ground Water and Drinking Water National Drinking water priorities and regulatory development, Region 5's presentation on the discussion of building partnerships among small systems to share services and thus build capacity, source water protection, and EPA's proposed approach for electronic delivery of Consumer Confidence Reports.

II. MAIN DISCUSSIONS & CONCLUSIONS

PRESENTATION # 1: STATUS REPORTS OF EPA REGULATIONS

Phil Oshida presented a status report on EPA Regulations and discussed the following topics:

- The general flow of the Safe Drinking Water Act's (SDWA) regulatory process.
- The process and current status of the Contaminant Candidate List (CCL).
- The process and current status of the Unregulated Contaminant Monitoring Rules.
- The criteria required to make a determination to regulate a contaminant.
- The potential outcome of regulatory determinations.
- The process and current status of the Six-Year Review and other regulation reviews.

Although none of the aforementioned topics required a consensus by the council, there were a number of follow-up discussions and points of clarification that stemmed from Mr. Oshida's presentation to include:

- How selected contaminants are prioritized for research and what information was included on the containments within the CCL3.
- Clarification on the CCL process, how it has been improved and consequently how the CCL3 process is more transparent.

- A discussion about cases without enough information to make a full determination on certain contaminants and how they are often put on the next UCMR so that they can begin to collect information on them even though a regulatory determination has not yet been made.
- An update on the letter on lead replacement sent by NDWAC to EPA in 2011.
- The Cryptosporidium timeline and method being proposed by EPA.
- The National sentiments and appropriateness of chloramines within systems.
- The current state and plans for improvement of the national contaminant database.

Presentation # 2: CONSULATION ON THE REGULATION OF PERCHLORATE IN DRINKING WATER

Eric Burneson presented on the proposed regulation of perchlorate in drinking water. He focused on the background of perchlorate; its history in drinking water, SDWA requirements, what the Science Advisory Board is doing, reviewed stakeholder involvement, and the analytical methods and treatment technologies. At the end of his presentation, Mr. Burneson presented three questions to the council to further the discussion:

Question 1: What thoughts does NDWAC have on the availability of analytical methods to measure perchlorate?
Question 2: What thoughts does NDWAC have on the available treatment technologies for the removal of perchlorate from drinking water?
Question 3: How should EPA promote water systems working with local authorities to reduce perchlorate in source?

STATEMENTS BY MEMBERS OF THE PUBLIC ON PERCHLORATE

Two presentations by members of the public were made in opposition to the Perchlorate Rule.

Kimberly Wise's presentation addressed the question of whether or not perchlorate is causing an adverse effect in health and if the implementation of perchlorate standards is warranted. After a brief description and background as to the status of the perchlorate determination by EPA, Ms. Wise commented that there is currently insufficient epidemiological data for causal association between perchlorate exposure and thyroid dysfunction.

Jonathan Gledhill's presentation was given on behalf of the Perchlorate Study Group, comprised of perchlorate users and manufacturers who have worked cooperatively with EPA and states on ensuring the best available science involving perchlorate. Mr. Gledhill discussed the issue that EPA had not yet met all SDWA requirements for setting an MCL and still needed to use the best available science to determine health exposures and make a determination that the benefits of regulation justify the cost in setting an MCL.

The council had a lengthy discussion in response to both the EPA and public presentations on perchlorate. Many of the members requested clarification as to source, current status of regulatory deliberation, and how the Reference Dose (RD) for perchlorate was determined. Additionally, the Council debated the perchlorate treatment technologies: anion exchange (AX), biological treatment, reverse osmosis (RO), and point-of-view reverse osmosis (POU RO). The Council asked EPA to explain which of these treatments was the most effective in terms of contaminant removal, health risk reduction, waste generation, and cost. EPA mentioned for large to medium size public water systems the most cost effective would be anion exchange and for the smaller systems, POU RO. Although they explained that in terms of the overall effectiveness, most of these technologies can get down to very low concentrations so the best measure is cost, the Council could not come to a consensus on the topic and concluded that they still had questions and needed more information.

Although there are many proven technologies that exist and analytical methods that have been established, the Council has an issue with regulating perchlorate just because it can be regulated. There were questions as to whether they needed to be looking at the source of the problem versus how it is currently being dealt with and its effects. None of the council members agreed on a particular treatment method; however did agree that in small rural areas treatment is not an option. The Council concluded that there were still many unknowns about perchlorate and consequently they did not have enough information to make a solid recommendation to EPA except to proceed cautiously.

Presentation # 3: SMALL DRINKING WATER SYSTEMS AND BUILDING PARTNERSHIPS- REGION 5.

Tom Poy presented on System Collaborations in Region 5 in which he discussed the prevalent issues that exist in small systems. He stated that funding is a major issue for small systems with MCL violations and asked the Council to share any innovative approaches/vehicles to provide funding. Mr. Poy also asked the Council to comment on what innovative approaches could be used to provide technical and managerial assistance to the systems.

Andrew Sawyers added on to Mr. Poy's presentation by stating that EPA is trying to determine the best way to mitigate the compliance issues and concerns many small systems are facing and would like the Council's help with looking at some innovative approaches for doing so. Mr. Sawyers explained that many of the small systems are owned by homeowners associations and individuals who do not have the knowledge base and/or income to manage the systems properly. He explained that although they may get the system in place, small systems owners are often left questioning how to maintain them due to the lack of planning, financial, technical, and managerial resources available.

The feedback collected from the council consisted of recommendations based on what members had experienced in their own states and regions. For example, it was commented that if given the right tools, small systems can have the same knowledge base and capabilities that the larger systems have. It was also mentioned that the mechanics at the State level often

prohibit small systems from regulating the way they should and consequently if the mechanics are reevaluated within states it may help the smaller systems.

The council agreed that small systems require leadership development and initial assistance in order to visualize where they are going in the future and make them sustainable over the long term. The example was given that some states have a central funding program that covers the costs of some required fees; helping small systems remain compliant and connect with larger systems. Another recommendation made was to create a committee that meets to coordinate the funding process and provides an opportunity for small systems to meet with the funding agencies to discuss their issues and proposed projects. The council stated that engaging stakeholders in the planning process prevents some issues through front end involvement. Small systems need to trust the stakeholders and larger systems. The council agreed that there are many opportunities for Region 5 to help assist the small systems.

Presentation # 4: SOURCE WATER PROTECTION

Elizabeth Corr and Yu Ting Guilaran presented on source water protection. The ultimate proposed goal is better drinking water and source water quality for both surface water and ground water 20 years from now. The proposed objectives are for EPA and their partners to increase the focus on drinking water sources to better protect human health and minimize the burden of new or additional drinking water treatment costs. They explained that there are many potential ways to set priorities for source water protection efforts and investment like contaminants of concern, geographic focus, and water system characteristics. In reaching out to the public they outlined the need to include developing clear relevant messages, identifying forums and technologies for delivering and utilizing data and information to understand issues.

In the council discussion, most members provided recommendations on what they did in their individual states. It was commented that many states are constrained on resources and that the focus should be put on certain areas rather than states taking on too much and losing momentum. The Council stated that in order to create sustainability of the water there has to be collaboration. It was commented that there are two primary goals: better drinking water and educating communities to create a sense of ownership between them and water protection. They noted that a more integrated approach will make a community feel the need to safeguard the water.

Presentation # 5: CONSUMER CONFIDENCE REPORTS

Mindy Eisenberg and Elizabeth Corr presented on EPA's retrospective review of the Consumer Confidence Rule, including the proposed approach for the electronic delivery of CCRs. Her presentation highlighted the CCR Rule, the CCR Rule Retrospective Review, the draft CCR Electronic Delivery Options and Considerations Document, feedback from the public meeting and next steps for review. Ms. Eisenberg summarized the key points from the review in which it was determined that in order to meet the SDWA and CCR Rule requirements of directly delivering a CCR to every customer, a community water system may

need to use a combination of paper and electronic delivery, of which the following five methods exist:

1. CCR is embedded in the email message
2. Email the CCR as a file attachment
3. Email direct URL to CCR
4. Mail direct URL to CCR
5. Additional electronic delivery that satisfies "otherwise directly deliver"

Ms. Eisenberg noted that there is not one solution that will fit all customers and/or every community water system and consequently systems may want to take the time to discover what customers prefer before implementing a change. The review also revealed that the projected cost savings may not be immediate and it may take some time for some customers to adapt to the idea of electronic delivery. In reference to the public meeting, Ms. Eisenberg reported that there was a lot of support for electronic delivery.

The council agreed that a vast amount of work has been done and that this initiative is great because it is modernizing the methods of CCR delivery; however, they did mention a couple of potential issues. It was stated that not all customers will have proper internet access, so leaving the option to the customer to opt-in or out of electronic delivery might be something to consider. Additionally, the council discussed that EPA does need to ensure consumers are aware of the change in delivery options before implementing the new method. It was mentioned that when the CCR rule was first implemented it had good momentum; however, customers eventually began to lose interest. It was suggested that the electronic delivery option might bring some of that momentum back, but EPA needs to figure out how to keep that momentum alive to get customers coming back for more. Some council members recommended that leaving the five delivery options open to the water systems and allowing them to make their own decision on how to infiltrate the electronic CCR into their community would accommodate for a variance in resources within communities.

Overall, the consensus is that the electronic delivery method of the CCRs is headed in the right direction. Regardless of what method is used, there will be challenges and you cannot get to 100 percent of the population because the control is on the end of the customer; however, the Council appreciates that the utilities will have the flexibility to try and reach their customers electronically. The motion to move forward with the electronic delivery of CCRs for the 2013 CCR season was approved.

III. CLOSING

Key outcomes of the meeting included a consensus by the Council that there were still many unknowns about perchlorate and consequently they did not have enough information to make a solid recommendation to EPA except to proceed cautiously. In regards to building partnerships in small drinking water systems, the Council agreed that there are many opportunities for Region 5 to help assist the small systems. Some of the suggestions provided to Region 5 included revaluating state mechanics to provide more support and

resources for smaller systems and engaging stakeholders in the planning process to create a sense of trust among small systems, their stakeholders, and nearby large systems. On the topic of source water protection, the Council stated that in order to create sustainability of the water there has to be collaboration. It was commented that there are two primary goals: better drinking water and educating communities to create a sense of ownership between them and water protection. The meeting concluded with the motion to move forward with the electronic delivery of CCRs for the 2013 CCR season was approved. The Council determined that the proposed methods were not only viable, but would be extremely useful to utilities and commended EPA for all of the front-end research they are doing in preparation for the implementation of them.

Attendees

National Drinking Water Advisory Council (NDWAC)

Jeanne-Marie Bruno, General Manager/Senior VP, Park Water Company, Downey, CA
Jessica C. Godreau, P.E., BCEE, CPM, Chief Public Water Supply Section, North Carolina Division of Water Resources, Raleigh, NC
Elston Johnson, Technical Specialist, Water Supply Division, Texas Commission on Environmental Quality, Austin, TX
Jill Jonas, Director, Bureau of Drinking Water and Groundwater, Wisconsin Department of Natural Resources, Madison, WI
Maria Elena Kennedy, Executive Director, Quail Valley Environmental Coalition, Rancho Cucamonga, CA
Sonja Massey, P.E., Chief, Groundwater Branch, Alabama Department of Environmental Management, Montgomery, AL
James McCauley, Manager, Lower Brule Rural Water System, Lower Brule, SD
Olga Morales, Chair, Rural Development Specialist, Rural Community Assistance Corporation, Dona Ana, NM
Douglas Owen, P.E., BCEE, Vice President and Chief Technology Officer, Malcolm Pirnie, Inc., White Plains, NY (only the first day on the phone)
Robert George Vincent, RS, MPA, Environmental Administrator, Bureau of Water Programs, Florida Department of Health, Tallahassee, FL
June Weintraub, ScD., Senior Epidemiologist, San Francisco Department of Public Health, San Francisco, CA
Chris Wiant, M.P.H., Ph.D., President and CEO, Caring for Colorado Foundation, Denver, CO

Centers for Disease Control and Prevention (CDC) Liaison

Mr. Max Zarate-Bermudez, MS MPH, PhD, Epidemiologist, Division of Emergency and Environmental Health Services, National Center for Environmental Health, CDC, Atlanta, GA

U.S. Environmental Protection Agency (EPA) Attendees

Rita Bair, Region 5
Pam Barr, Acting Director, Office of Water, Office of Ground Water and Drinking Water (OW/OGWDW)
Eric Burneson, Chief, Targeting and Analysis Branch, OW/OGWDW, Standards and Risk Management Division (SRMD)
Thomas Carpenter, Science Advisory Board (via phone)
Elizabeth Corr, Associate Director, OW/OGWDW, Drinking Water Protection Division, (DWPD)
Nicholas Damato, Region 5, Water Division
Mindy Eisenberg, Branch Chief, Protection Branch, OW/OGWDW/DWPD (via phone)
Yu-Ting L. Guilaran, Associate Director, Assessment & Watershed Protection Division, Office of Wetlands, Oceans, and Watersheds (OWOW)
Tinka Hyde, Director, Water Division USEPA-Region 5
Janet Kuefler, Region 5
Phil Oshida, Acting Director, OW/OWGDW/SRMD

Tom Poy, Chief, Ground Water and Drinking Water Branch Chief, USEPA-Region 5
Andrew D. Sawyers, PhD., Deputy Director, OW/OGWDW
Heather Shoven, Region 5
William Spaulding, Region 5, Ground Water/Drinking Water Branch
Jacquelyn Springer, Assistant DFO, OW/OGWDW

Designated Federal Officer (DFO)
Roy Simon, OW/OGWDW

Members of the Public

Public Attendees Oct 4
Daneen Farrow-Collier, CDC
Jonathan Gledhill, Policy Navigation Group
Gregory Harvey, Wright-Patterson Air Force Base
Mike Keegan, Rural Water Association
Samie McCauley
Andrea Putz, Department of Water Management, City of Chicago
Chris Reimer, National Ground Water Association
Chi Ho Sham, The Cadmus Group, Inc.
Alan Starr, City of Chicago
Kimberly Wise, American Chemistry Council

Public Attendees Oct 5
Irene Caminer, City of Chicago
Daneen Farrow-Collier, CDC
Gregory Harrey, Wright-Patterson Air Force Base
Andrea Putz, Department of Water Management, City of Chicago
Chi Ho Sham, The Cadmus Group, Inc.
Alan Starr, City of Chicago
Kimberly Wise, American Chemistry Council

Meeting Summary: Thursday, October 4, 2012

OPENING REMARKS

Olga Morales, NDWAC Chair; **Tinka Hyde**, Director, Water Division USEPA-Region 5; and **Roy Simon**, DFO, NDWAC, opened the meeting and provided an overview of the agenda.

Marcia St. Martin; Craig Woolard, Ph.D., P.E.; and Mae Wu, Esq. were not in attendance. Doug Owens, P.E., BCEE, participated only on the first day via telephone.

WELCOME AND UPDATE ON OGWDW PRIORITIES AND REGULATORY DEVELOPMENTS

Pamela Barr, Acting Director, OGWDW; Phil Oshida, Acting Director, Standards and Risk Management Branch, OGWDW

Purpose: Presentation and discussion of national drinking water priorities for the year and regulatory developments.

Pamela Barr welcomed and introduced Andrew Sawyers, the new and permanent Deputy Director of the Office of Ground Water and Drinking Water. Ms. Barr also announced that the Agency recently named a permanent Director of the Office of Ground Water and Drinking Water, Peter Grevatt. Ms. Barr noted that there was a 0.6% increase in the budget for the first six months of FY 2013 for the Office through a continuing resolution. She stated that EPA did not currently have a good sense of what the budget will be for the whole year and that it will be decided later in the fiscal year. Ms. Barr stated that the selection of next year's meeting place had not yet been decided upon and that it would take some time to determine, however she commented that it is common practice to have the meeting in Washington D.C. one year and out of Washington D.C. the next year.

Ms. Barr went over the expectations of the meeting and stated that the main purpose was to consult on the proposed perchlorate regulation initiated through a presentation by Mr. Eric Burneson.

In closing, Ms. Barr mentioned a number of issues related to Environmental Protection Agency (EPA) and the National Drinking Water Advisory Council (NDWAC):

- Noted there was no expectation of letters and stated that if there is something the Council feels very strongly about then they could send a letter to the Administrator.
- Summarized a June call of the Council and discussed how it was primarily about hydraulic fracturing. She mentioned that thousands of comments were received and it will take some time to sort out.
- Explained that the EPA recently signed a Memorandum of Understanding (MOU) with the Federal Veterans Administration in an attempt to encourage veterans with disabilities to work in the water sector. Mentioned that this could potentially fill a number of the jobs expected to open up within the industry.

- Discussed water security and explained that some of the tools available are quite sophisticated.

Phil Oshida presented a status report on EPA Regulations and discussed the following topics:

- The general flow of the Safe Drinking Water Act's (SDWA) regulatory process at each stage needs increased specificity and confidence in the type of supporting data used (e.g. health, occurrence, and treatment).
- Contaminant Candidate List (CCL): EPA has to make regulatory determinations on whether or not to regulate five contaminants on the CCL every five years. If it is determined to move forward and regulate, then there is a 24 month period to get the proposal out and 18 months after that to get a final regulation out, with up to a nine month extension. The existing drinking standards are reviewed every six years for revisions. Revised regulations must maintain or improve public health projection.
    - EPA has started work on CCL4 and it must be out by 2014. Mr. Oshida reported that to date they have invited the public to nominate contaminants and received input via web, email and written documentation. EPA expects to publish a draft CCL by next year to meet the 2014 deadline.
- All information on Unregulated Contaminant Monitoring Rule 2 (UCMR2) is available on the web. Thirteen out of 25 contaminants monitored were not detected. UCMR3 was published in March of 2011 and the final came out in 2012. EPA is in the process of putting together all the information and sampling packages to start monitoring in January 2013.For UCMR3, twenty-eight chemicals and two viruses were on the list of 30 contaminants.
- In December 2010, the environmental working group increased EPA's awareness of hexavalent chromium in drinking water. It has since been put on the UCMR3 list and EPA will have national information and a complete risk assessment by end of 2015.
- In order to make a determination to regulate a contaminant it must to meet three criteria.
    - Adverse effect on health of persons.
    - Known to occur, or there is substantial likelihood that the contaminant will occur, in a regulated Pubic Water System (PWS) with a frequency and at levels of public health concern.
    - Contaminant presents meaningful opportunity for health risk reduction for persons served by PWS.
- The potential outcome of regulatory determinations are:
    - No regulatory determination (insufficient data to assess).
    - Positive determination (a finding of yes for all 3 of criteria).
    - Negative determination (not enough information and one of the 3 criteria not positive), usually in that case EPA develops a non-regulatory health advisory.
- Six-Year Review and Other Regulation Reviews:
    - Revised Total Coliforms Rule. It was identified in the first six-year review and needed revision; projected to come out in late 2012 or early 2013.
    - Carcinogen Volatile Organic Compounds (VOC). Developing options to try to develop group Maximum Contaminant Level (MCL) and it is very challenging. EPA hopes to come back to the Council for further consultation next year. If all

goes well, EPA expects to propose a regulation in 2013, but have some hurdles to try to meet that deadline.

- The Lead and Copper Rule promulgated in 1991, with revisions in 2000 and 2007. EPA working on long term issues raised in 2005 and plans to publish revision in early 2013.
- As part of the Six-Year review, EPA has started to review Long Term 2 (LT2) Surface Water Treatment Rule and the Cryptosporidium Rule. EPA is looking at it not only as part of the Six Year Review, but also as part of all aspects of LT2, and it will be included on next cycle of the Six-Year Review.

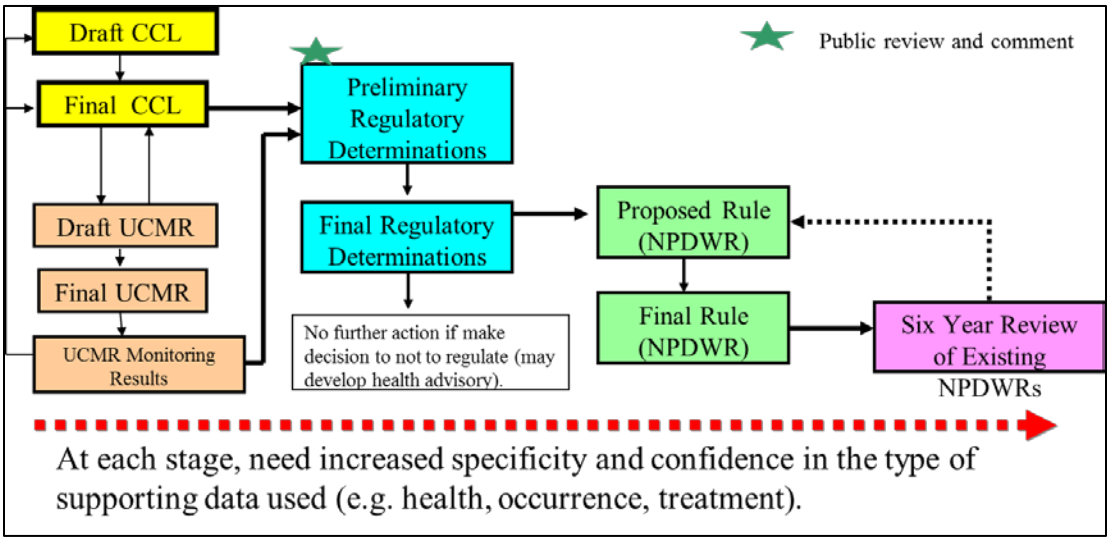

Figure 1. General Flow of SDWA Regulatory Processes

Ms. Weintraub asked four follow-up questions to the presentation. She asked if NDWAC's comments to the EPA on the previous round of CCL's were included, if the CCLs included that the selected contaminants should be prioritized for research, and if so, did that occur. She mentioned that she participated in the selection process to help select the contaminants on the CCL2. She asked Mr. Oshida to expand on the process after EPA puts the contaminants on the CCL.

Mr. Oshida replied that CCL3 includes a large compendium of information on each contaminant. It is an indication of what information, if any, is still needed to make a determination in the future, like health information and occurrence information. He mentioned that follow-up information could be found on the web.

Ms. Barr mentioned that in CCL1, experts gave advice and that was carried over to CCL2 after some regulations were made; however, it was not a transparent process. CCL3 went to the Science Advisory Board for advice on how to do this a more transparent way. EPA started with recommendations from the National Council of Sciences and then brought those recommendations to NDWAC and asked how can we implement this. Ms. Barr explained that it was also much more involved including working with the Office of Research and Development (R&D) and many positive effects came from the collaboration. Some of the public comments were that it is too long and it is not prioritized enough.

Ms. Godreau asked for clarification on the UCMR3 schedule. She understands that UCMR3 monitoring will occur from 2013 to 2015 and then the regulatory determinations will be made from 2013 to 2014; however, she noticed the same chemicals on both UCMR2 and UCMR3. She questioned why the regulatory determination list is scheduled to be finalized before it is slated to have the monitoring done.

Mr. Oshida stated the EPA does not have the luxury of doing everything in sequence and that there are times when projects overlap. He explained that in cases where there is not yet enough information to make a full determination on certain contaminants; they are often put on the next UCMR so that they can begin to collect information on them even though a regulatory determination has not yet been made.

Mr. Burneson commented that it has to do with the frequency level of contaminants. He mentioned that they are scoring whether or not they can make a determination while at the same time collecting data on the occurrence of the contaminant.

Ms. Barr pointed out that there is a short list of contaminants on slide 34 of Mr. Oshida's presentation, but we have to act on five.

Ms. Godreau mentioned that last year NDWAC sent a letter to EPA on lead replacement. She asked for an update on what EPA is doing in response.

Ms. Barr responded by saying that one aspect of the letter dealt with enforcement and they will handle that on a case-by-case basis. Not many systems will be affected.

Mr. Burneson commented that the other aspect of it is that the provisions of the rule related to eliminating partial service lines has not been through the Administrator review yet so they do not yet know what the final resolution is.

Ms. Weintraub asked for more information on the cryptosporidium method. She asked what is being proposed and what the timeline is.

Mr. Oshida responded that there has been a substantial increase and improved counts in regards to the recovery of cryptosporidium in different territories where the cryptosporidium method is used. He explained that although the method has been released and put out in the expedited methods in the federal register, it has not been done so by notice and comment. He stated that it is not a rule change and you do not have to use the new improved method; it may not be to everyone's advantage. Mr. Oshida noted that the EPA workshop in November will talk about the information the EPA received from the last round of monitoring expectations from both the new and old method of monitoring cryptosporidium and more discussion is needed.

Ms. Weintraub commented that that was helpful. As a follow up, she asked about chloramines and how although she used to be apprised as to the national sentiment on it, she was not anymore. She explained that she had heard of a couple of jurisdictions having public challenges

when they made the switch and consequently wondered if the EPA had an idea as to the national sentiment.

Mr. Oshida stated there are increased questions as to the appropriateness of chloramines in particular groups across the nation. However, EPA has not changed our viewpoint. The Office of R&D is currently looking for the differences between chloramines and chlorine and their effects, but we do not have scientific information and have not yet changed our viewpoint.

Ms. Weintraub commented that Mr. Oshida's response did not answer her question. As a follow-up, she asked if the media has driven publicity. In San Francisco, she explained that it is not a big public issue and that they have used chloramines for nine years; however, she has noticed through Google alerts that jurisdictions are changing and wondering if there seems to be public uproar in those cases.

Ms. Barr said it is hard to say at the national level because systems do not report what they are using. Ms. Barr recommended asking the states, since they will have a better idea to local sentiment.

Mr. Johnson said that in Texas they have been using chloramines for a while. He stated they have had a few issues over the last five years where there were concerns with the safety and use of chloramines, but nothing big.

Ms. Godreau commented that in North Carolina, many systems have changed to chloramines in the last ten years, but she has not heard of any public concern or national backlash.

Mr. McCauley commented that in South Dakota many of their systems are small, but they are using chloramines because of how far they are pushing the water; 12,000 square miles of water pipe. He stated that originally the main plant did not want to switch for fear of public uproar; however, they educated their system and worked directly with the state and water associations, which helped dramatically.

Mr. Burneson mentioned that last month he met with 16 or 17 utilities, of which half had experienced a switch and only one or two had substantial public resistance so they initiated a rigorous public awareness campaign.

Ms. Weintraub thanked everyone for their positive input and thinks this is helping utilities be more transparent.

Mr. Zarate-Bermudez asked in regards to the Cryptosporidium Rule, and the fact that Mr. Oshida mentioned that they will be looking at systems in the western part of the country. Mr. Zarate-Bermudez asked for an explanation as to why they are focusing on the west and has the EPA considered other areas. He stated that the southeast has problems with cryptosporidium as well and asked why they were not exploring that region.

Mr. Oshida said that they are looking at systems that are in the process of covering their reservoirs, still need to, or have already. He noted that they are looking at the process to get a

better understanding of what it entails. He explained that they were not looking at cryptosporidium issues other than the reservoir cover process.

Mr. Zarate Bermudez responded and asked Mr. Oshida to elaborate why covering the reservoir helps cryptosporidium issues.

Mr. Oshida responded that the regulations require that all finished reservoirs are covered. He explained that as part of LT2, the covering of the finished reservoirs is one of the issues they have to look at to do a comprehensive review and six-year review of LT2.

Mr. Vincent asked about the organic compound group standard and the standard for developing it. He asked if there was a notice in the federal register for it, could the process be followed, and what the timeline for it was.

Mr. Oshida stated that they started the process to look at the possibility of regulating a group since the Administrator wanted to do groups as a part of new drinking water initiative. He mentioned that they are still at that investigatory stage and have not gotten to the proposal. In the near future, they hope to have a workshop. He explained that steps have not yet been taken internally to develop a group MCL and that it is not moving forward as fast as they would like it to be.

Mr. Burneson commented that they have an ambitious time frame of having the proposal out a year from now. However, things have not gone as smooth as they would have liked. He mentioned that there will be public input federal register notice announcements, workshops, and the Science Advisory Board will be involved.

Mr. Owen (on phone) commented on the Six-Year Review occurrence data and that the last bullet of Mr. Burneson's presentation says they received lots of data, which is good. He stated that he and Ms. Barr probably remembers back when they were working on the Revised Total Coliform Rule and reconciling state and federal data and believes the process between the two are similar. He asked if it looked like this was going to be a significant source of data, and if so, how was EPA handling the data, verifying it and whether it end up in a federal database for future review. He asked what the process would be for managing and storing the data.

Ms. Barr responded that yes, it all goes in the national contaminant database, on the website, and on the pivot tables. In the future, they are hoping to move towards the next generation of the safe drinking water information system and the goal there is to have a data system that can seamlessly transfer data back and forth. It will be a much more consistent database for states to work and they will have access to more data. Ms. Barr stated it will take a fair amount of money, but they will be able to get started on it.

Mr. Owen commented that was helpful and that there is value in confidence in the data. He noted that the worst thing is to go through the effort and not have confidence in the data. He stated that data collection and management is always a significant undertaking but it seems as though there is a process in place to get the funding to improve the process.

Ms. Barr thanked Mr. Oshida for the presentation and everyone for their great questions.

CONSULTATION: PERCHLORATE RULE

Pamela Barr, Acting Director, OGWDW; Eric Burneson, Chief, Targeting and Analysis Branch, OGWDW

Eric Burneson presented on the proposed regulation of perchlorate in drinking water. He focused on the background of perchlorate, its history in drinking water, SDWA requirements, what the Science Advisory Board is doing reviewed the stakeholder involvement, and lastly the analytical methods and treatment technologies (see presentation on NDWAC website).

Mr. Burneson presented three questions to the council at the conclusion of his presentation:

> Question 1: What thoughts does NDWAC have on the availability of analytical methods to measure perchlorate?
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> Question 2: What thoughts does NDWAC have on the available treatment technologies for the removal of perchlorate from drinking water?
>
> Question 3: How should EPA promote water systems working with local authorities to reduce perchlorate in source?

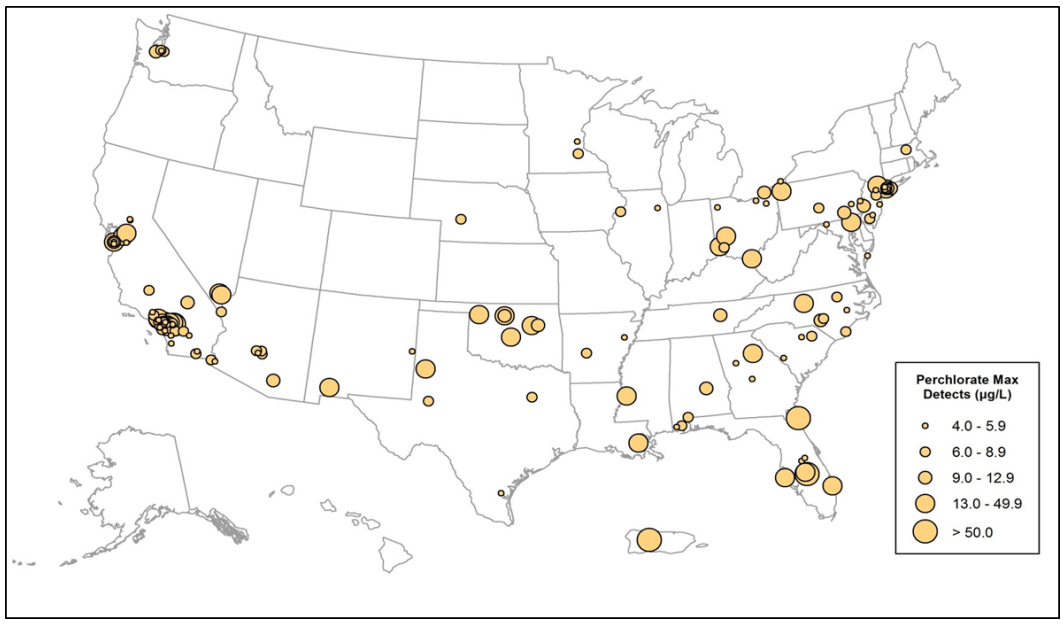


Figure 2. System–Level Geographic Distribution of Perchlorate

STATEMENTS BY MEMBERS OF THE PUBLIC ON PERCHLORATE

Roy Simon, DFO, NDWAC

COMMENTS TO THE EPA NATIONAL DRINKING WATER ADVISORY COUNCIL
Kimberly Wise, PHD, American Chemistry Council

Kimberly Wise's presentation (see presentation on NDWAC website) addressed the question of whether or not perchlorate is causing an adverse effect in health and if the implementation of perchlorate standards is warranted. After a brief description and background as to the status of the perchlorate determination by EPA, Ms. Wise commented that there is currently insufficient epidemiological data for causal association between perchlorate exposure and thyroid dysfunction. On behalf of the American Chemistry Council, Ms. Wise made the following recommendation to EPA:

- Review and evaluate the underlying science for the regulation.
- Confirm a meaningful opportunity to provide public health benefits.
- Implement best practices from regulatory agencies and public water systems that have implemented similar standards for perchlorate.
- Ensure robust and coordinated engagement with stakeholders throughout the process.

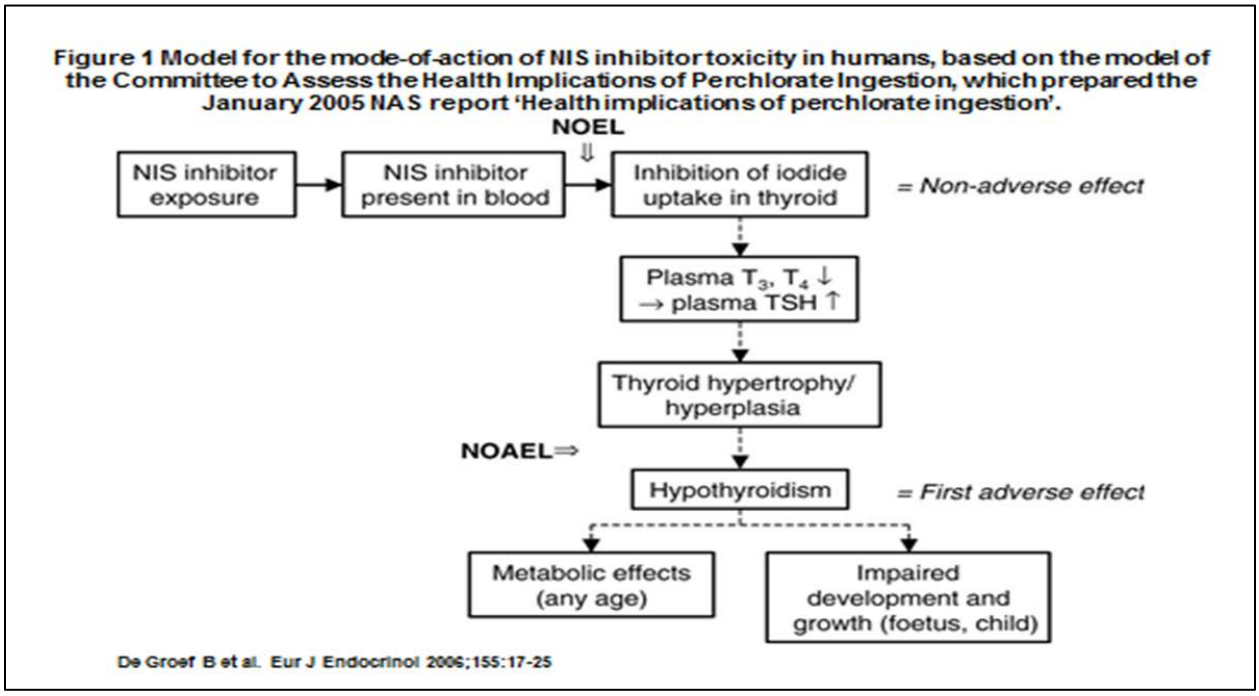


Figure 3. Model for the mode-of action of NIS inhibitor toxicity in humans.

PSG PERCHLORATE PRESENTATION TO THE NATIONAL DRINKING WATER ADIVSORY COUNCIL
Jonathan Gledhill, Policy Navigation Group

Jonathan Gledhill's presentation (see presentation on NDWAC website) was given on behalf of the Perchlorate Study Group, comprised of perchlorate users and manufacturers who have worked cooperatively with EPA and states on ensuring the best available science involving

perchlorate. Mr. Gledhill discussed the issue that the EPA had not yet met all SDWA requirements for setting an MCL and still needed to use the best available science to determine health exposures and make a determination that the benefits of regulation justify the cost in setting an MCL. Mr. Gledhill concluded that regulating perchlorate in drinking water is a very small and ineffective way of avoiding the adverse effects because the contaminant exists in most food. Consequently, the PSG urged that the NDWAC panel recommend that EPA:

- Carry out all of the Science Advisory Board recommendations.
- Conduct a comprehensive benefit-cost analysis that incorporates the key findings of the NAS and the Science Advisory Board, which are:
    - The occurrence data is insufficient to support determining an appropriate MCL and Health Risk Reduction Cost Analysis (HRRCA);
    - Define the adverse effect before developing the MCL/Maximum Contaminant Level Goal (MCLG); and
    - Review the impact of other goitrogens as part of benefit-cost analysis.

COUNCIL DISCUSSION ON PROPOSED PERCHLORATE RULE
Olga Morales, NDWAC Chair; Pamela Barr, Acting Director, OGWDW

Mr. Wiant asked how extensive the research on hypochlorite has been on figuring out the formation of potential chloride and its storage time.

Mr. Burneson responded by saying that there was a fairly extensive evaluation published in the Journal of American Water Works Association by Greiner et al. in which they considered all operational characteristics. He stated that he would provide the article to the Council.

Mr. Wiant asked how amenable it is for them to use the Reverse Osmosis Point of Use (RO POU) device in small systems.

Mr. Burneson stated the RO point-of-use (POU) devices are already manufactured, certified, and packaged and that it is a centralized treatment approach that is being discussed. He explained that with the anion exchange there are package operations out there and asked for clarification as to whether Mr. Wiant wanted to know what packages do exist, or could exist.

Mr. Wiant responded by stating either.

Mr. Burneson stated that it is an incentive to provide more packaged applications if there was the Perchlorate Rule.

Mr. Carpenter joined the meeting via conference call.

Ms. Jonas asked Mr. Burneson about the Massachusetts (MA) experience and working with the perchlorate in permitting of fireworks through fire departments and whether there was a difference in sources of ground water.

Mr. Burneson stated that he did not get that information from his MA source and he thinks they had both but cannot determine if it was ground water or source water.

Mr. Zarate-Bermudez stated that Mr. Burneson's presentation dealt with a wide range of complex issues and consequently he would concentrate on two areas. To begin he asked about the populations at risk and the fact that different slides showed different populations at risk. He stated that the last slide showed pregnant women and the adult population, and stated that he thought it needed to be more consistent as to what populations at risk are identified today and that women of child-bearing age would probably fit into this group.

Mr. Burneson responded that that is a good point. He said the populations are general population numbers, not distinguishing the affected life stages. He explained it represents people of all ages and all gender types. He went on to explain that the slide talks about sensitive life stages that have been identified and are a focus of the national academies. He mentioned they have asked the Science Advisory Board to address these issues.

Mr. Zarate-Bermudez asked Mr. Burneson what the main source of perchlorate is.

Mr. Burneson stated that the bottom line answer is they do not know what the main source is and for this particular regulation, it is not the critical factor. The critical issue is if it is in drinking water and if so they need to figure out how to remove it. There are multiple sources, but Mr. Burneson noted that he cannot say what the main source is because it does not directly relate to the regulatory determination.

Mr. Zarate-Bermudez said the reason he asked was because he thought one of the approaches could be source control. He said that his last question is in regards to resin anion exchange treatment and he commented that Mr. Burneson had mentioned anion exchange was very effective; however, he wanted to know which one was the most effective of all the techniques.

Mr. Burneson responded effective is relative to cost. He mentioned for large to medium size public water systems the most cost effective would be anion exchange. For the smaller systems, RO POU is the best. He explained that in terms of the overall effectiveness, most of these technologies can get down to very low concentrations so the best measure is cost.

Ms. Weintraub asked if life categories are something that the Science Advisory Board is trying to answer on a broader level or just in reference to perchlorate.

Mr. Burneson answered by saying his response was broad because he was trying to address the specific regulatory issue regarding perchlorate. He explained he cannot predict what the Science Advisory Board will recommend, but that by the looks of the initial drafts, it seems to be very perchlorate focused.

Ms. Weintraub asked about the waste generation disadvantages of the three technologies and stated that Mr. Burneson clearly described the waste of selective resin, but not the other two. She asked whether the other two technologies were more manageable where waste was concerned.

Mr. Burneson responded that one of the advantages for biological treatment is it has the cleanest waste streams. With the RO there is a waste stream, it consists of the concentrated brine that has concentrated levels of the perchlorate and other potential ions in the source water. He explained that the cost could be impacted by exposing the brine to the other ions in the source water that need to be removed.

Mr. Vincent mentioned that the RO slides did not have a summary of cost for the central RO.

Mr. Burneson responded that they are still developing the central POU application costs, but on a relative scale, it will be more than anion exchange but less than biological treatment exchange. He stated that currently they do not have costs to share on RO central just RO POU.

Mr. Vincent asked if the health risk reduction costs and benefits were factored in when setting the MCL.

Mr. Burneson replied that as shown on slide 11, the health risk reduction analysis costs and benefits are a factor in the evaluation. He explained that in the end, the Administrator has to make the decision on what to do based on whether the benefits justify the cost at a feasible level. He stated that the Administrator has the authority to raise the MCL to a higher level to where the benefits out-weigh the cost.

Mr. Vincent commented that because all the work that labs have done with radiation removal and arsenic removal from anion exchange much of the treatment has reduced in price and he believes the same will happen with the technologies being discussed if they were to become an MCL.

Mr. Burneson responded that Mr. Vincent made an excellent point and thanked him.

Mr. Johnson asked what is used for the estimate as to what the cost will be for the state implementation of the MCL.

Mr. Burneson replied that the cost is primarily driven by the number of hours the state will have to dedicate in personnel cost for outreach to the systems, developing materials to be distributed, and collecting, compiling, storing and reporting data associated with the compliance of the rule.

Mr. Owen commented when you get into POU treatment systems you are only dealing with a faucet for one location, not all the water that household will be using. He asked if in any of the literature identified risks associated with dermal contact or infusion through the blood stream that might make us think differently about using a POU over Point-of-Entry (POE) or centralized systems.

Mr. Burneson replied that dermal exposure is not an issue in terms of perchlorate.

Mr. McCauley commented that the ground water in his area has RO systems on them but they are not owned by the system, rather by a company like Culligan. He continued by stating

Mr. Burneson mentioned in his presentation that the systems would have to own the RO units and wanted to know if there was a possibility for a system to create an agreement with a water company and still meet requirement of the RO statutes.

Mr. Burneson replied that the statute is very explicit about ownership however, they do allow for someone contracted with the water system to operate the unit. He explained that if there is already an RO unit owned and operated by a homeowner, there could be a way for the system to take over ownership of the unit. The system could work out ownership and make contractual arrangements with customers or third party to own and operate it.

Mr. McCauley asked about point of entry and the fact that some systems have multiple points. He gave the example of four or five towns pulling from the same place and asked where the point of entry would be in that situation.

Mr. Burneson asked for clarification and stated that POU units are in the households. He asked if Mr. McCauley was referring to centralized systems in which a system gives water to multiple people. Mr. Burneson explained in the case of a centralized system, every system would be required to conduct perchlorate monitoring at every point of entry within the subsequent systems.

Mr. McCauley asked who took on the liability of residual effects in that situation.

Mr. Burneson responded that each of the systems distributing water had to comply with the MCL and have to monitor where the water is coming into their system. Consecutive systems; however, can apply for reduced monitoring because not all of the purchasing systems necessarily have to do what is required for state approval.

Ms. Godreau asked for clarification on thyroid health effects. She stated that one section of the Science Advisory Report says there is a lot of information on the effects on the thyroid and one says there is not enough evidence.

Ms. Weintraub said it is a terminology issue and explained that they are referring to the studies of populations and not individuals. She noted that you cannot make a causal inference in this type of study design.

Ms. Godreau looked to clarify her understanding of the report and stated the individual data and evidence is strong, and the population is lacking.

Ms. Weintraub responded that it meant the opposite and that you cannot use that particular design to make a causal inference.

Ms. Godreau commented in reference to the modeling approach and that the current regulations are sensitive to sub populations. She asked how the EPA treated the issue historically.

Mr. Burneson replied that there are provisions about sensitive populations. EPA is evaluating potential benefits to those sensitive populations. He explained that most regulations EPA has today lack the ability to distinguish the effects among population standards. Many standards are

based on chronic illnesses, the exposure, and lifetime of risk; so the driver is the entire population. Mr. Burneson noted that the reference dose is expressed as the dose you get per body weight. He stated that trying to protect the highly exposed individual is one of the factors EPA has asked the Science Advisory Board to address. He commented that the inconsistencies were because the report was only a draft of recommendations from the Science Advisory Board and that they are still being worked on.

Ms. Godreau asked what the proposed approach of data analysis and gathering is for perchlorate in comparison to nitrate.

Mr. Burneson replied a key distinction between the Reference Dose (RFD) for perchlorate and nitrate standards, and that perchlorate is based on a human study derived from the National Academy of Sciences recommendations. He explained that 37 healthy adults in a population were tested and there was no observable effect level. Using the reference of .7 micrograms per microgram of body weight a day, the EPA sought out advice from the Science Advisory Board on translating that to a usable standard. Mr. Burneson continued by explaining how the Nitrate RFD was done through an epidemiology study of children drinking water. The sensitive factor was the point of the study and they actually drank the water. They did not have to try to translate the value derived from the study into the drinking water maximum contaminant level.

Ms. Morales asked if there are currently more sources of perchlorate since its determination in 2008 and if they were looking at addressing the sources of the problem or dealing with the consequences. She followed with a second question asking if there is a need to assess the sources of the perchlorate if there was not an increase of it.

Mr. Burneson replied that the primary change was not the information in the frequency level of occurrence, but in the three factors that guide regulatory determination. He explained that within the primary data set they are also looking at other available sources and supplemental sources, similar to how California and Massachusetts have done. Mr. Burneson noted that when they compared the data they found that less than 1 % of systems have perchlorate.

Ms. Kennedy asked for clarification and noted a conversation she had with one of the staff members from Region 9 about perchlorate in disadvantaged communities. She explained that he told her that there was a greater impact on disadvantaged communities because of the lack of access to fresh food and naturally occurring iodine. She asked what the NDWAC comments were on this issue when they were consulted.

Mr. Burneson responded that the EPA we did not consult with NDWAC and that they went directly to the communities. He stated that there was concern that perchlorate occurred more frequently in water systems where environmental injustices were more likely to be found; however, they are still looking to see if there is a disproportionate amount in communities with environmental justice concerns. As far as the perspective that perchlorate is more likely in these communities because of the lack of fresh foods, that he had never heard of, in fact, he stated perchlorate is more likely in foods like dairy and greens.

Ms. Kennedy said that makes sense and that was what the staff member said, that the lack of fresh foods in minority populations is because they are less likely to have farmers markets and access to fresh produce like they do in the suburbs. She noted minority communities eat more processed foods because of the lack of markets.

Ms. Jonas stated that the process for establishing an MCL takes quite some time. Ms. Jonas followed with a question concerning whether or not thyroid issues seem to be expanding and if there are any other contaminants that are emerging as having as significant or greater impact on thyroid issues.

Mr. Burneson responded that he cannot speak to any other thyroid issues. However, perchlorate is not the only iodine inhibitor out there.

Ms. Weintraub commented that contaminant groupings are a more enlightened way of regulating things based on a group approach. Perchlorate was on three CCL's in a row and it all fit into EPA's process. She followed up with a question to Mr. Burneson stating that since the EPA was still considering if the three reasons for regulating perchlorate are valid, did he think there was a possibility that EPA would reconsider their designations.

Mr. Burneson replied that the Science Advisory Board deliberation was not over and consequently they have not yet stated that the three determinations are correct. He stated that they are currently looking for more input as to whether or not the criteria will have adverse health effects. The agency determination to regulate was their final determination, but it is still possible. Although the agency plan is to put a proposed regulation out, ultimately they could decide not to regulate. He noted, however, the current plan is to follow through.

Ms. Godreau asked how proven the modeling was both in general and for perchlorate.

Mr. Burneson clarified and asked Ms. Godreau if she was referring to physiologically based pharmacokinetic (PBPK) modeling.

Ms. Godreau responded that she was referring to PBPK modeling.

Mr. Burneson replied that PBPK modeling was reviewed and adopted by the agency in 2008, but at that time, the EPA's adaptation model had not been reviewed. The PBPK model is a practice in the agency for developing risk assessments. He noted that the key difference is that the agency uses PBPK modeling before not after.

Ms. Godreau commented she was looking to understand the impact level versus no inverse impact level of perchlorate and how that was decided.

Mr. Burneson stated that the impact level of perchlorate was decided based on what EPA was told do by the National Academy of Sciences. He stated that there is the no-effect level and no-adverse effect level. Mr. Burneson explained no-effect levels means there is no observable bio chemical effect and that when looking at perchlorate, they only saw the norm. He noted that there was evidence of inhibiting the iodine uptake, but that an individual would not become

symptomatic because of it. He stated that only after thyroid levels are perturbed for long periods of time would development issues occur. It was consequently determined that there were no adverse effects: hypothyroidism or development effects.

Mr. Vincent asked whether the inactivation or inhibition of the iodine uptake is due to blocking the receptor for the iodine much like carbon monoxide blocking oxygen.

Mr. Burneson responded that there is a sodium iodine symporter (NIS) center in the thyroid that grabs the iodine. The inactivation or inhibition of iodine occurs because perchlorate shares characteristics with iodine and mimics it resulting in the receptors grabbing the perchlorate instead of iodine.

Mr. Vincent commented that he has heard of plenty of cases where iodine does not have to work to block receptors.

Mr. Owen commented that in looking at the graphic on slide 6 of Mr. Burneson's presentation, it seems that the calculation for potential exposure was low and that seems like an underestimate given that some of the samples were taken in highly-populated areas. He explained that if you look at the current treatments that exist in these populations, it is not highly efficient for perchlorate removal. Consequently, he stated, you are not going to get a lot of removal for levels that causes concern. Mr. Owen continued by giving an example about smaller systems and how the suggested treatment technologies for the Perchlorate and the Arsenic Rule overlap and stated that it is important that attention is paid to the type of technologies that are put in place for perchlorate. He agreed that the Administrator had to ultimately decide what was feasible about health reduction compared to its cost. For smaller systems, the major cost for centralized treatment systems is in disposal. In his opinion, POU treatment disposal can be straightforward if it goes down the drain and into a wastewater treatment plant; however, some systems may not be able to remove the waste depending on the wastewater treatment processes that they have. In cases such as these, the waste will just be passed into another receiving water body and will become someone else's drinking water source. Mr. Owen explained that he favored the biological treatment technology as it degrades perchlorate rather than removing it and transferring it ultimately to another waste stream that must be dealt with, but that biological treatment is still relatively new and unproven at full scale. He recommended that when looking at the centralized treatment for RO, EPA look at the arsenic cost document and the cost document for the DBP rule. There will also be similarities in ion exchange costs.

Mr. Burneson replied and said the map on slide 6 represents the hits EPA got in the UCMR sampling, which is a census of the large systems. He explained that the EPA did not extrapolate out what that would mean for the small systems. There is a 1% hit rate for small systems; however, they still need to find out how many would produce perchlorate hits.

Mr. Burneson wanted to review the questions on slide 44 with NDWAC.

Questions 1: What thoughts does NDWAC have on the availability of analytical methods to measure perchlorate?

Question 2: What thoughts does NDWAC have on available treatment technologies for the removal of perchlorate from drinking water?
Question 3: How should EPA promote water systems working with local authorities to reduce perchlorate in source waters?

Ms. Morales stated that having worked with small systems, her concern is the cost of treatment, analysis, and maintenance within these communities. She explained that there needed to be a mechanism to lessen the financial impact on communities who do not have a budget to be sampled or even the means to deal with the requirements locally. Ms. Morales recommended waivers as a way to offset the cost for small systems, of which a number of them had very small perchlorate hits after being sampled. She went on to say that she agreed with Mr. Owen in regards to disposal and noted that in small rural systems, they have to go across state lines to dispose of waste in which case it becomes more expensive to dispose of waste then to treat it. Ms. Morales then clarified her last question and asked what the source of perchlorate was that utilities of communities could help manage as a preventative measure.

Mr. Burneson replied that the EPA was hoping the Council could answer that. He commented that they know what types of activities are potential sources like fireworks displays, organic nitrate fertilizers, and missiles. He asked the Council for input on whether they believe there are systems within communities that could potentially undertake such management and if so what should the EPA encourage them to do.

Ms. Weintraub commented that when Mr. Owen was talking about the population centers, she thought of surface water, but then Mr. Burneson clarified the map and stated that it was biased towards population centers. Consequently, she wonders if there are relationships between sources. She stated that she would like to see an environmental assessment of what the relationships are between the potential sources of high perchlorate levels and actual levels; not just what we now can contribute but what we can actually see. She then stated that it looked like the chart included the acceptable performance in higher dissolved solids concentrations and that she assumed that was because there tends to be a higher perchlorate level when there are higher total dissolved solids.

Mr. Burneson replied to Ms. Weintraub's point about methods performance and high level of solids and stated that it was the thickest waters that anyone is willing to drink. He stated that if the method works under those levels, it would work in others as well; however, that does not mean perchlorate is tied to high levels of solids.

Ms. Weintraub commented in terms of the waiver approach that it is a place where we can think about going that might make sense. She stated that source reduction should be incorporated into the regulation where it is currently required to sample once every three years, but systems should be required to show that their hypo-chloride strategies are trying to reduce the levels.
Ms. Weintraub gave the example that a town could provide an ordinance to prevent firework use in the area as a way of doing so.

Ms. Morales responded that this approach would be her preference, and explained that most of the samples come from large cities where chances are more fireworks are used. She noted that they have always had resistance lining everyone up against the same standards.

Mr. Wiant commented that it was a cart and horse issue and questioned whether they were looking at things in the right order. In terms of source water, Mr. Wiant suggested looking at the Clean Water Act and what was done in the occurrence arena. He stated if fireworks are the main source of perchlorate, it is only a short-term issue, unless it is a persistent compound and asked if that had been looked at. Mr. Wiant noted that there were still a lot of unanswered questions like whether the presence of perchlorate was naturally occurring or caused by human sources and if any cause-effect relations existed. He commented that the implications of such regulations were huge and unless they are based on solid science, there will be challenges made by stakeholders in both the adoption and enforcement phases. Consequently, Mr. Wiant recommended collecting more data to answer the unknowns before the EPA proceeds with an MCLG or MCL. He stated there is always going to be uncertainty but they should be sure they have an idea of where that uncertainty ultimately lies.

Mr. Zarate-Bermudez commented that, following up on a recommendation of one member of the public, the EPA should not rush the determination and/or regulation. He stated that it seemed like they needed more time and a more in-depth development of the regulation.
Mr. Zarate-Bermudez mentioned he would like to take some of the questions EPA asked the Council back to his colleagues who have more expertise on the subject for further input. For example, to ask about the work of CDC in analyzing perchlorate in formula. He asked if someone knows about the half-life of perchlorate in the environment and encouraged EPA to discuss source protection and control and to look at the different ways in which perchlorate needed to be dealt with depending upon whether it was a natural occurrence and consequently a prevalent problem, or caused by things like fireworks in which case it is an acute problem. He concluded that the Council would still need to hear from the Science Advisory Board in order to further discuss the findings and the current language in the report.

Ms. Weintraub commented that she hopes that the EPA comes back to the Council for further input. She stated that in California, the environmental health hazard assessment has gone through a similar process. She explained that they have a particular fact sheet from 2005, which was really helpful in picking the adverse vs. no-effect levels. She also mentioned an external peer review would be helpful.

Ms. Barr responded that the health issues are very technical and consequently the public health process needs to be done through the Board. She stated that the Council will not be readdressing the issue.

Ms. Godreau asked how long the effects on the body last during iodine uptake blocking and if normal body function is restored when the perchlorate is gone. She continued by stating they should do a parallel track to identify the sources and look at what other regulatory tools the EPA has for holding the appropriate parties responsible. She commented that just because you can regulate does not mean you have to and that they needed to flush out several critical issues before an informed decision could be made. She noted that the cost information is incredibly

alarming and fears that the EPA will rely on POU because it is the most affordable, even though it may not meet state needs. She stated she is still confused about adverse effect vs. no-effect and that it sounds like zero risk, which she says they do not do in SDWA.

Mr. Vincent commented that there were plenty of analytical methods now and in his opinion that anion exchange and biological treatment seemed like the best options, although they would be expensive. He continued that in order to figure out what will be most effective, he recommends looking at individual cities or counties and how they deal with water quality through source water and ground waters to determine the current sources of perchlorate and then mediate where it is manageable in the case of both a natural or human made occurrences.

Ms. Morales wrapped-up the perchlorate discussion by stating that although there are proven technologies that exist and analytical methods that have been established, the Council has a problem with regulating just because it can be regulated. She questioned whether they needed to be looking at the source of the problem versus how it is being dealt with. Ms. Morales continued by stating none of the Council members agreed on a particular treatment and in small rural areas treatment is not an option. She commented that if it had to be treatment, the treatment should be done through source water protection. Reiterating the fact that the EPA should not regulate just because they can, Ms. Morales stated that there are so many unknowns and so much information missing. She concluded by stating the issue of perchlorate regulation was a very complex issue to deal with and that the Council did not have enough information to make a solid recommendation to EPA except to proceed cautiously.

REGION 5 PRESENTATION ON SMALL DRINKING WATER SYSTEMS AND BUILDING PARTERNSHIPS

Tinka Hyde, Director, Water Division USEPA-Region 5; Andrew Sawyers, Deputy Director, OGWDW; and Tom Poy, Chief, Ground Water and Drinking Water Branch, USEPA-Region 5

Purpose: Discussion of Building Partnerships among small systems to share services and thus build capacity.

Figure 4. Region 5 efforts with small systems.

Tinka Hyde gave a brief introduction and overview of Region 5 in which she stated the area comprised a large percentage of the nation's public water systems and non-community systems. Ms. Hyde gave the specific example of how many community water systems within Region 5 work with schools and day care centers in an attempt to implement monitoring and reporting violations and look for opportunities to improve the conditions within the facilities.

Tom Poy presented (see presentation on NDWAC website) on System Collaborations in Region 5 in which he discussed the prevalent issues in small systems. He stated that funding is a major issue for small systems with MCL violations and asked the Council if there are innovative approaches/vehicles to provide funding besides the traditional Drinking Water State Revolving Fund (DWSRF), and United States Department of Agriculture (USDA)-Rural development funds. Mr. Poy also asked the Council what innovative approaches could be used to provide needed technical and managerial assistance.

Andrew Sawyers added on to Mr. Poy's presentation by stating that the EPA is currently trying to determine the best ways to mitigate the compliance issues and concerns many small systems are facing and would like the Council's help with looking at some innovative approaches for doing so. Mr. Sawyers explained that many of the small systems are owned by homeowners associations and individuals who do not have the knowledge base and/or income to manage the systems properly. He explained that although they may get the system in place, the small systems owners are often left questioning how to maintain them due to their lack of available planning, financial, technical, and managerial resources. Mr. Sawyers commented that they appreciated any input the Council could provide on how to deal with this issue.

Ms. Morales stated that small systems can have the knowledge and capability if given the right tools. She gave a personal example explaining what she did through partnership and

regionalization between agencies and smaller systems. She explained that the key was interconnecting where it is physically feasible so that systems could regionalize the managerial and financial aspects. Ms. Morales continued by stating that the mechanics at the state level often prohibit small systems from regulating the way they should be. Consequently, she recommends reevaluating the mechanics within states to help the smaller systems, like providing funding to them initially and then graduating them to being independent. Ms. Morales explained, reactive by nature, small systems require leadership development and initial assistance in order to visualize where they are going in the future and make them sustainable over the long term.

Ms. Kennedy commented that one of the ways California has gotten utilities to partner with small disadvantaged communities is through Prop 84, a regional water management plan in which 10% of the plan funding was set aside for smaller disadvantaged communities to help them build infrastructure and provided incentives to both involved parties. She concluded that Prop 84 was almost over and they were now trying to figure out a way to continue fostering the partnerships without the incentive of funding.

Mr. Johnson commented that in Texas the state program utilizes DWSRF set asides to contract with a technical assistance provider for free on-site assistance for small public water systems and they have been funding this project for the past 10-12 years. Providing aid in all aspects of financial managerial assistance, Mr. Johnson explained that the state optimization program has created modules about various treatment and operational topics so the technical assistance providers can have standardized methods to assistance to systems. Commenting on Ms. Morales' point that small systems had a hard time with sustainable long-term efforts, Mr. Johnson explained the program creates a source of knowledge and assistance to systems to help them navigate the various agency requirements and specifications. He mentioned that they developed a committee that meets every two months to coordinate the funding process in Texas and provides an opportunity for potential applicants to meet with the funding agencies to discuss their proposed project, one-on-one resource of contracts for systems to turn to for advice.

Mr. Wiant commented that there was a water quantity problem in Colorado. Rather than being concerned about providing water today, they were concerned with being able to provide quality water in the future. He explained that one tactic they have used is to engage stakeholders in the planning process, not only at the city level, but also with the developers and providers. Mr. Wiant explained that they are able to prevent some issues through front-end involvement in which they interface with the decision makers and look for opportunities to work with them to incorporate mitigation techniques into their plans. He commented, in order to cause change, first there needed to be trust and then a continued collaboration among the agencies and developers and/or providers.

Ms. Massey commented that in Alabama, managers made a concerted effort to strongly encourage the small systems and were successful in convincing them to connect to neighboring systems. Through a multi-year effort, they were very successful in encouraging them to connect to larger systems.

Mr. McCauley commented that in South Dakota, there are wells everywhere but the water was undrinkable. He explained that many of the water systems went through and picked up the smaller ones and took them off the wells, which made them compliant and saved them money. The small systems that chose to stay on the wells took it upon themselves to get certified and train their managers. Mr. McCauley commented that the biggest problem with some areas is small politics; however, through education and making the choice, that of the system, you are more likely to have a positive outcome.

Mr. Vincent commented that from a regulators point of view, they have annual compliance visits, which seem to help with face-to-face visits. He explained that they take some of the set asides like Texas, to hire technical assistance to include PE work, license operators, and regulate systems smaller than those regulated through the SDWA. He noted that they are also required to have Continuing Education Units (CEU) and offer a university training center at the University of Florida to regulate smaller systems.

Ms. Morales commented that there are other innovative approaches that have worked in New Mexico. She explained that after the 1996 amendments to the SDWA, the state charged three cents for every 1000 gallons pumped at the source and that the money goes to a central account. She stated that the money is used by the state to pay for sampling and to conduct analytical testing, but that the shipping is paid for by the entity. She commented that although there are still systems out of compliance, traditionally if a small system was non-compliant it was because they could not afford to sample and so this was no longer an issue because the funds now covered the cost. Ms. Morales explained that the large systems are subsidizing the smaller systems but they do not mind because all of the administration is done by the state and this significantly reduces the number of systems that are out of compliance. Ms. Morales gave a second example in which she explained how in 2006, under Governor Bill Richardson, it was required that every funding agency require the same level of criteria to fund projects. Everyone now meets the criteria and knows how to prepare because it is one set of requirements for everyone.

Ms. Godreau asked Mr. Poy how they were able to get travel dollars for public meeting participation, how the meetings were advertised to consumers, and what attendance was for the meetings.

Mr. Poy responded that the travel funds were not extensive because the small systems were in central Illinois and they drove to the meetings. He explained that one meeting was advertised by putting EPA on the agenda and asking local contacts to spread the word around town and 300 people attended. For another meeting in a more difficult system, Mr. Poy stated that they sent out fact sheets with heath information and noted on it that the EPA would be coming to the community. He explained that they were there from early afternoon into the evening as a way to make it more convenient for the community members, of which the concerned citizens did show up and told the EPA that the school was not allowing children to bring bottled water into the school. Mr. Poy stated that they were forcing the students to either drink tap water or buy bottled water from the school. He described how the EPA got involved because the water had high levels of radium.

Mr. Sawyers thanked everyone for their comments and noted that all will be considered. He also stated that he wanted to talk to Ms. Morales about the difficult issue of identifying the areas that are not currently being funded that could build capacity in small systems.

Ms. Morales commented that it is an opportunity.

SOURCE WATER PROTECTION

Elizabeth Corr, Associate Director, Drinking Water Protection Division, OGWDW; Yu-Ting L. Guilaran, P.E. Associate Director Assessment & Watershed Protection Division Office of Wetlands, Oceans, and Watersheds

Purpose: Presentation on possible EPA Office of Water (OW) priorities.

- Overview of SDWA's source water protection framework
- Source Water Protection through Clean Water Act programs
- Discussion topics: How to define objectives; decide where to start; and reach out to the public.

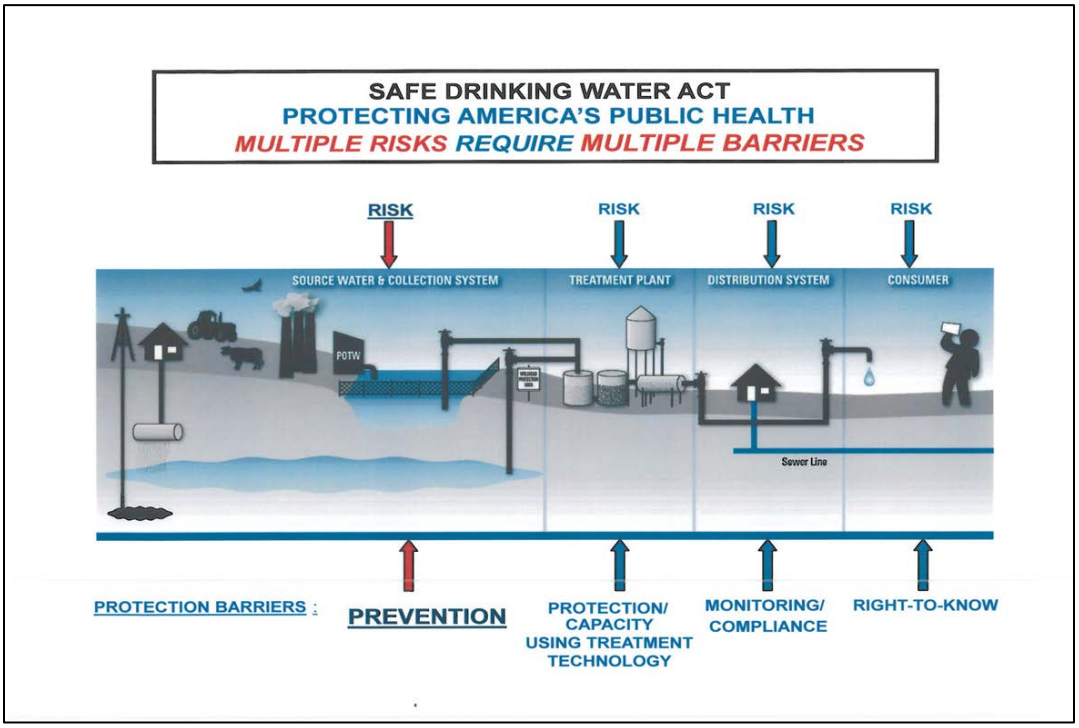


Figure 5. Safe Drinking Water Act risks and barriers.

Elizabeth Corr and Yu Ting Guilaran jointly presented (presentation on NDWAC website) on source water protection beginning with a summary of the purpose and objectives of the presentation. They stated that the proposed goal is "better drinking water source water quality for both surface water and ground water 20 years from now." The proposed objectives are that the EPA and partners will increase focus on drinking water sources to better protect human health and minimize the burden of new or additional drinking water treatment costs. They

explained that there are many potential ways to set priorities for source water protection efforts and investment like contaminants of concern, geographic focus, water system characteristics, and the other priority for setting criteria. In reaching out to the public, they outlined the need to include developing clear relevant messages, identifying forums and technologies for delivery and utilizing data and information to understand issues. The presentation concluded when Ms. Corr and Ms. Guilaran opened up to the Council for feedback on three questions. The three questions were:

1. What should our goals and objectives be?
2. Are these the right goals and objectives? Do they take us in the right direction?
3. Where should we start? Short-term long term? How can we engage stakeholders & citizens in protecting their source waters? Reaching out the public. How to we develop clear and relevant messages? What kind of technology and forum?

COUNCIL DISCUSSION ON SOURCE WATER PROTECTION (SWP)

Olga Morales, NDWAC Chair; Elizabeth Corr, Associate Director, Drinking Water Protection Division, OGWDW; Yu-Ting L. Guilaran, P.E. Associate Director Assessment & Watershed Protection Division Office of Wetlands, Oceans, and Watersheds; Pamela Barr, Acting Director, OGWDW

Ms. Weintraub referenced slide 4, and commented that source water protection is familiar to her, but that she has noticed that protection of source water is the only preventive element; the rest is responsive and a form of mitigating the acceleration of problems. She stated that once you use treatment technology you are not protecting the source, but rather removing the problem of not having protected the source in the first place. Consequently, Ms. Weintraub suggested adding public health surveillance as a tool for identifying a problem in the systems, which would help them to go back and ask what is wrong with the source. Additionally, she recommended that maintenance of existing programs or watershed strategies be injected into already well-protected waters. Ms. Weintraub gave the example that in San Francisco, they are serviced by a reservoir and there is an initiative being introduced that a local water service be used instead. She explained that although there may be environmental reasons for making the switch, from a drinking perspective, they have a great water source. Ms. Weintraub concluded that it would be good to include status quo where the status quo is working.

Ms. Massey commented that in her state, they have a variety of programs under the ground water branch and work closely with the drinking water program. She commented that early on she decided that they would make the resource commitment to inspect underground storage tank sites once a year if they were part of the source water protection assessment area; although the Energy Act of 2005 only requires states to inspect every three years. Although the result is hard to quantify, Ms. Massey explained that it has resulted in a higher rate of compliance and that the 305(b) report has indicated underground source tanks as one of the leading sources of ground water contamination

Mr. Wiant commented that they have the good fortune in Colorado of having regulatory responsibility for the Clean Water Act and Drinking Water in same agency. He explained that in Colorado, there was a unique group of local watershed groups that are very engaged and that

is where they get their bang for the buck because citizens get actively involved in source water protection. Mr. Wiant gave another example of the Colorado Water Quality Forum, which is a group of individuals from all over the state that addresses a variety of water issues. He explained that even large utilities get involved in watershed issues because they recognize the outcome will affect them. He concluded that he is not sure if the level of interest comes from the fact that it is Colorado and you can help but want to protect it, but the solution for them has become community involvement.

Ms. Bruno commented that something that may improve source water is to make the current treatments more efficient. She stated that she does not think they need to wait for a new treatment water clause.

Mr. Vincent commented that there are difficulties with the report in that it does not prioritize the nutrient input and where they come from. He asked if the initiative would include any kind of positive incentives for reaching out to the sources. He commented that they have a couple of initiatives like the one Mr. Wiant spoke of, dealing with farm water and oil. They are spring initiatives of best management practices for farmers. Mr. Vincent followed with the question of whether or not the EPA was going to think about pesticides and other organic chemicals that are found in source and/or ground water over time, especially in converted agricultural areas that become developed and drill wells. He concluded that you could not make a farmer clean up their contaminants if there is not a contingency plan for legacy pesticides or spills. Mr. Vincent questioned whether this was something the Clean Water Act should be encouraged to address.

Mr. Johnson commented in reference to question three posed by the presentation and stated that six or seven years ago, they made a concerted effort to do more outreach to the public so they went into the communities and worked with a third party PR firm to conduct a series of meetings and get them excited about source water protection while simultaneously involving the community in the development plan. He explained that currently there are 500 utilities that have participated in the program and as a means of furthering the idea of collaboration, they have now developed a website that highlights best practices and tools that communities can use for a source water protection plan. Mr. Johnson concluded that because the program was voluntary, engaging the communities helps to spread the programs message.

Ms. Guilaran asked if the website Mr. Johnson talked about was part of the source water protection website.

Mr. Johnson responded that the source water website is not the state program website but that they link to the website from their main website.

Ms. Barr commented given the fact that states are constrained on resources, she wonders if in order to build and keep momentum, the focus needs to be put on certain areas, rather than states taking on too much and losing momentum. Ms. Barr concluded by asking the Council for advice and recommendations as to what should be focus on if anything.

Ms. Morales commented that thinking about source water protection takes her back to the days when she was involved in the Climate Ready Utilities Work Group. It was a yearlong process,

and the take away was that there is no go-it-alone when it comes to source water protection. It cannot be drinking water and clean water working independently. Consequently, Ms. Morales stated in order to create sustainability of our water there has to be collaboration. She commented that there are two main goals, the first being better drinking water and that they needed to avoid putting a time limit to it or focusing on drinking/surface water independently. The second goal is educating communities and creating a sense of ownership between them and water protection. Ms. Morales stated that it takes an integrated approach in which connections are made between people, ways of life within a community, and water protection so that the communities will feel a need to safeguard it. She gave the example of how in a farming community you cannot look at water without integrating farmers because it affects so much of their livelihood and business.

Ms. Weintraub commented on the second question posed by the presentation and stated that the discussion seemed to be circling back to the morning's discussion and was getting away from the individual component approach. She suggested looking at land uses as a way of focusing. She gave the example of focusing on storm water runoff and how it provides an opportunity to address a lot of ground water protection issues like spills, agricultural uses, and highway contamination. She commented that this approach also provides an opportunity to collaborate with other agencies with similar efforts to leverage the projects and funding for mutually beneficial use.

Ms. Jonas stated that in reference to Ms. Barr's question about focus, she believed that there is a real need to focus. She agreed that there should be a basic focus on protecting and improving drinking water, because a focus on source water and wellheads will only confuse people at the local level. Ms. Jonas commented that specific to contaminants, nitrogen and phosphorus are two contaminants that needed to be integrated into the safe drinking water programs. She explained that when the public hears phosphorus and nitrogen as nutrients it is assumed there are only positive effects. However, in drinking water when there is too much of either, the impact is not good for the overall quality. Ms. Jonas further explained that in her opinion, many of the protection tools reside in the Clean Water Act and since source water protection is voluntary, Ms. Jonas recommends that EPA and other agencies purposefully regulate and shed light on the tools that they can control as a way to influence the voluntary process and cause a residual impact. She suggests agencies focus resources where the subjects overlap to minimize cost and utilize resources.

Mr. McCauley commented that there is lots of overlap from system to system and gave the example of how with zone coverage, you have to go to your source water and questioned whether that was at the system's intake or head. He explained that his source water head starts in Missouri, but they have run off that comes in from Wyoming. Mr. McCauley commented that it all goes back to educating people in communities and informing them how far the zones stretch and where jurisdictions begin and end. He explained that there are a lot of questions in his area about source water protection and who is responsible for protecting it; the state or the region. Mr. McCauley concluded by stating there is a need to re-educate stakeholders and decision makers about source water.

Ms. Godreau commented that one of the things that needs to be done on a national level is a regulation development process for the Clean Water Act in parallel to safe drinking water

regulatory development process. She explained that there needs to be a parallel analysis of contaminants within other regulatory programs going on while the safe drinking water contaminant lists is in process so that discharge standards can be changed before the regulation of drinking water. Ms. Godreau stated that it seems to currently happen the other way around and once an MCL is released, the source is explored. She recommends looking at where else the contaminants can be affected before water companies have to treat for them; helping to facilitate a philosophical shift about the responsibility of source protection. Ms. Godreau explained that Region 4 has started asking those involved in the Clean Water Act what they are doing and asking them to include information from the SDWA, to improve their regulations. She concluded that there is a responsibility on drinking water programs to supply relevant water quality data.

Ms. Guilaran asked if the raw water data in Region 4 was collected by the state or utilities.

Ms. Godreau replied, by the utilities.

Ms. Massey commented that the opportunity for coordination is just within the SDWA programs. She explained that her program is unique in that they have coordinated with the Underground Injection Control (UIC) program and made a commitment to permit classified wells. To date, they have permitted 90 wells and have learned that although these systems are great improvements over septic tanks, they still can have nitrate discharges well above the drinking water standard. Recognizing that not all states have an abundance of resources, Ms. Massey recommends coordinating with UIC where source water protection areas have been identified to centralize the systems for priority permitting of classified wells.

Mr. Zarate-Bermudez commented that he has a similar perspective as Ms. Jonas and thinks question one and three could be combined, in fact he thinks all three questions can be integrated into one. He commented that there needs to be an evaluation component and more time would allow analyzing the findings and assessing the problems. In reference to the second question, Mr. Zarate-Bermudez stated that once the priorities are set, everything can be an objective.

Ms. Jonas stated that she likes the idea of having pristine areas that we want to continue to protect. She explained that acute contaminants should be the first priority, nitrates in particular and that they overlap with Clean Water Act Program. Ms. Jonas continued and commented that in regards to tools, the UIC programs make sense when focusing areas of priority. She concluded by stressing the importance of coordinating between the Clean Water Act and SDWA contractors because they are the ones hired by federal agencies to get the drafts out.

Mr. Oshida stated that as a veteran of watershed wars, he knows that there are people with very different priorities than those being identified by the Council. He consequently recommended that when they go out into the watershed, they need to work with people to find common issues that can be addressed to demonstrate a team effort and allow for good decisions to be made on common issues. Mr. Oshida explained that this collaboration will be done with the "money people" in the community and in order to make progress on big properties you have to first build a relationship and sense of partnership. He concluded by commenting on the idea of a parallel process in which different programs work in collaboration with one another and how this has

been in existence for some time. Mr. Oshida gave the example of how drinking water programs work with "pesticide people" to determine which kind of contaminants affect the endocrine system. Mr. Oshida recommends prioritizing across all programs what should be addressed next to have the most benefits across the U.S. For example, he suggests working with the contaminants people to determine which contaminants should be introduced to Congress or if new ones need to be taken into consider.

Ms. Guilaran commented that she will be following up with certain members of the Council in reference to their feedback. She stated that the Water Data Project is in her office right now to look at information that is out there, analyzing information to identify priorities, and she will definitely follow up with people from the Council as well.

Ms. Corr stated that there were many great suggestions made by the Council.

Ms. Morales thanked everyone.

WRAP-UP FIRST DAY

Olga Morales, NDWAC Chair; Roy Simon, DFO, NDWAC

Ms. Morales thanked Ms. Corr and Ms. Guilaran for their presentation and the Council for all of their comments and feedback.

Ms. Morales concluded the first day of the NDWAC meeting.

Meeting Summary: Friday, October 5, 2012

RECAP OF FIRST DAY'S DISCUSSION

Roy Simon, DFO

Mr. Simon reviewed the previous day's agenda. There was a brief discussion of the previous day's discussions on perchlorate and other sessions and then the discussion was tabled by the Council.

Olga Morales then welcomed everyone, thanked everyone for their discussion yesterday, and summarized the second day's agenda.

CONSULTATION: CONSUMER CONFIDENCE REPORT (CCRs) EXISTING RULE

Elizabeth Corr, Associate Director; Drinking Water Protection Division, OGWDW; Mindy Eisenberg, Branch Chief, Protection Branch, DWPD OGWDW (on the phone)

Purpose: Presentation on EPA's Retrospective Review of the CCR Rule, including EPA's proposed approach for electronic delivery of CCRs:

- Overview of Retrospective Review
- Methods for electronic delivery of CCRs
- Approaches and considerations to implementing electronic delivery

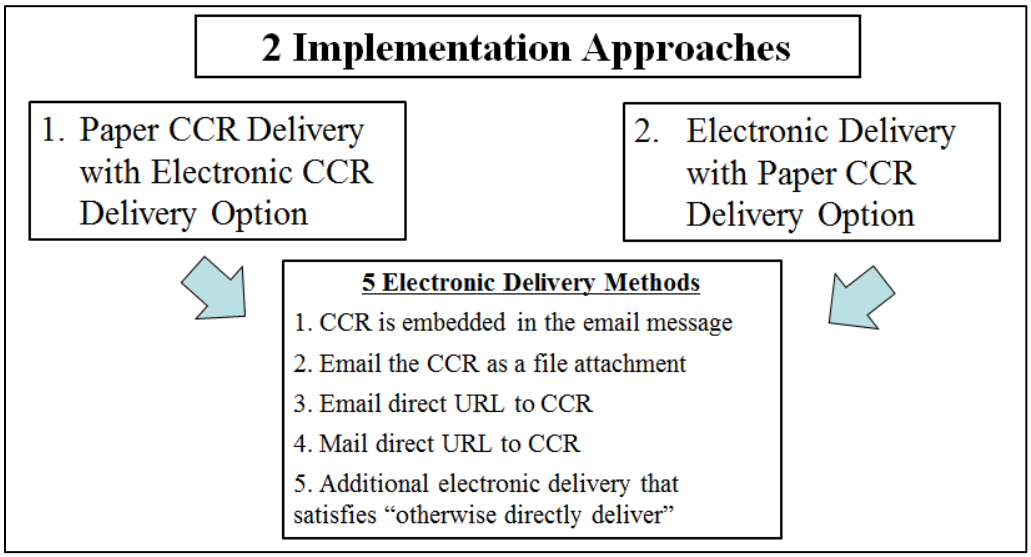


Figure 6. Electronic delivery methods and approaches.

Ms. Corr commented that their presentation (see presentation on NDWAC website) focused on the consumer and asked everyone to think about the following three items in terms of discussion before Ms. Eisenberg's began the presentation:

1. Thoughts on delivery methods, utilities making the URL as part of the bill.

2. What additional guidance to use for utilities?
3. How can we ensure that every bill-paying customer might get from their CCR?

Ms. Eisenberg gave an overview of the presentation in which she reviewed the CCR Rule, the CCR Rule Retrospective Review, the draft CCR Electronic Delivery Options and Considerations Document, feedback from the public meeting and next steps for review. Ms. Eisenberg summarized the key points from the review in which it was determined that in order to meet the SDWA and CCR Rule requirements of directly delivering a CCR to every customer, a community water system may need to use a combination of paper and electronic delivery, of which five methods exist:

1. CCR is embedded in the email message
2. Email the CCR as a file attachment
3. Email direct URL to CCR
4. Mail direct URL to CCR
5. Additional electronic delivery that satisfies "otherwise directly deliver"

Ms. Eisenberg commented that there is not one solution that will fit all customers and/or every community water system and consequently systems may want to take the time to discover what customers prefer before implementing a change. The review also revealed that the projected cost savings may not be immediate and it may take some time for some customers to adapt to the idea of electronic delivery.

In reference to the public meeting hosted early in the week, Ms. Eisenberg reported that there was a lot of support for electronic delivery. The following is a summary of both the positives and negatives of electronic delivery identified during the meeting:

Advantages:

- Utilities seem to appreciate the flexibly laid out in the draft through the different delivery methods listed and realize that one size does not fit all.
- Utilities liked the idea of providing a direct URL through postcards or on water bills.
- Utilities saw the environmental benefits of reducing the use of paper and ink, which will lead to cost savings that could be used to enhance their website; another opportunity to provide information to their customers.
- It was suggested that this change be used as a means of improving the current readability of existing CCRs and update the templates, guidance, and tools provided to water systems by the EPA.
- A general interest was expressed in highlighting ways utilities can notify customers on the change in delivery method.

Disadvantages:

- Concern was expressed about the maintenance of email addresses.
- Non-governmental organizations expressed concern that the EPA was not setting clear standards on what water utilities can do. They worried that since the change is guidance and not a regulatory change, utilities might take advantage of the system and not distribute the CCR properly.

- It was stated that not all customers will have proper internet access, and it was feared that the URL could get lost in the fine print of a document.

Ms. Morales commented that they have done a great amount of work and that it is good to see what has been received in terms of feedback and how much the initiative has progressed.

Ms. Weintraub echoed what Ms. Morales said and stated that she thinks it is really great what has been done in reference to CCRs and electronic delivery, in particular, the modern methods of getting feedback from stakeholders and that they are becoming institutionalized. In reference to slide 6, first bullet, Ms. Weintraub asked who the stakeholders were who requested that the EPA evaluate electronic delivery of CCRs, in addition to several other aspects of the CCR rule.

Ms. Eisenberg replied that they heard a lot from individual utilities as well as from ASDWA, AWWA, and AMWA.

Ms. Weintraub followed up and asked if there is evidence that doing electronic delivery will actually increase the number of people who read the CCR's.

Ms. Eisenberg replied that it was too early to determine and that they plan to work with utilities to determine if people are reading CCR's. She stated that it is something they definitely want to track.

Ms. Weintraub stated that she definitely encourages collaborating with some of the stakeholders or having a pre-and post-survey to make a comparison and assess the impacts, especially to measure the goal of the CCR improving consumer confidence and ensure the readability. Ms. Weintraub commented that they needed to consider the URL delivery option in that many websites change over time and if the URL changes, she wondered how they planned to communicate that information to the consumer. Furthermore, she noted that there should be guidance to the utility companies on what to do if a consumer selects electronic delivery and then the utility email is returned undeliverable. In reference to a previous comment made by Ms. Eisenberg about the reluctance of consumers to open emails with attachments, Ms. Weintraub stated that an opt-in approach would minimize that obstacle. She concluded that she was interested in the non-governmental organizations (NGO) comments about modifying existing CCR templates and believes that it is a real opportunity to improve the readability and usability of the CCR both in paper and web form. Ms. Weintraub further explained how it would be an opportunity to improve the intellectual receipt of the information they are trying to communicate.

Ms. Eisenberg replied that they heard from some of the utilities about how they built in hyperlinks and had the ability to get more detailed information when a consumer is on their website.

Ms. Bruno stated that as a manager of a water utility she wants to thank Ms. Eisenberg for this effort. She explained that it afforded utilities a lot of flexibility with electronic delivery and that her utility could very easily direct customers to a URL on a bill and make it pop out to get their attention. Ms. Bruno stated that this approach not only draws customers to their website to see

other information, but it will save them money. She concluded by asking if the electronic delivery would be implemented for the July 2013 CCR.

Ms. Eisenberg replied that they have asked all utilities to wait until the document is finalized, which they are on track to do by the end of the calendar year. She stated that given the time frame, she did not think every utility would be able to take advantage of the new delivery options due to the required upfront customer outreach, but it is possible for 2013.

Ms. Morales stated that she wanted to go back to the comments received Monday at the public meeting and asked Ms. Eisenberg to go over the list of standards.

Ms. Eisenberg replied that because it is not a regulatory change, they realize there is some limitation; however, we have stated that the CCR has to be delivered directly to the client. She explained they are not allowing the URL to just be listed on the utility's website, it must be imbedded in the email, or on the delivered document to ensure the consumer sees it. Ms. Eisenberg further explained that it is incumbent upon the water system to ensure delivery to every bill-paying customer through a combination of paper and electronic delivery. She stated that they had heard that some electronic bills and auto-pay customers may ignore their monthly bill statements and have consequently recommended that water systems consider sending a dedicated email to them with a CCR related subject line, so that the customer will see it. In terms of bounce backs, Ms. Eisenberg commented that they did see this happen during pilots and consequently recommended that a backup paper copy be sent in such cases. In conclusion, Ms. Eisenberg explained that one issue they need to consider more is consumer awareness prior to changing the delivery method. She stated that one suggestion made Monday by a utility in a large municipal government was to do a Public Service Announcement (PSA) prior to the change.

Ms. Morales replied that she was asking the question because there is a transition period and she remembers how big of a deal it was when the CCR rule was first implemented. It had good momentum for several years, and then people starting losing interest because it took someone else's interpretation to understand the report. Ms. Morales commented that she agrees with Ms. Weintraub and the idea of being more creative with the electronic versions of the CCR, but stated if file size is too large, customers might not be able to open. She continued by saying the implementation of the electronic CCR might give a little bit of that initial momentum back, but it will not be permanent. Ms. Morales stated that they needed to figure out a way to keep the momentum going and get consumers to read something that will educate them and keep them coming back for more information about something that has a direct impact on their health.

Ms. Weintraub asked if the two approaches and five methods presented on slide 11 are what the EPA is planning to present as the utility options or are they still looking to the Council for recommendations on which options they should present.

Ms. Eisenberg replied that the EPA is offering the approaches and delivery methods as the options that are allowed within the regulation, but would still like feedback from the Council.

Ms. Weintraub stated that she strongly advocates for the opt-in approach. She explained that paper is the status quo, especially given the issue of people not having internet access and all the barriers. She commented that she does not think option two should be pursued, but rather option one. Ms. Weintraub gave a personal example of how she uses Yahoo and explained that when she downloads an attachment it does not open automatically. Consequently, to improve readability, she believes a combination of option one and three and some language in regards to option five, are the best methods for delivering the CCRs. Ms. Weintraub concluded by saying she does not like the second method, but thinks option four as an adjunct is fine. She stated that sending someone direct mail to visit a website is not a very effective technique.

Ms. Godreau stated that Ms. Eisenberg mentioned their discussion with the public in regards to the Tier 3 public notice and asked if the EPA plans on including their feedback in the guidance moving forward.

Ms. Eisenberg replied that they did not have a lot of comments, but in terms of the time period that the water systems have to develop the CCR and printing, utilities may not be able to take advantage of the full 12 months where they can provide their Tier 3 notice. Ms. Eisenberg explained that it ends up being a shorter amount of time, which potentially would allow it to go 18 months, but that would require a statutory change. She stated that the EPA plans on discussing this issue more in their summary. Ms. Eisenberg concluded that the electronic delivery was something they could do through the existing regulation.

Ms. Jonas stated that she appreciates the option of electronic delivery and would like to advocate for option five on slide five. Ms. Jonas explained that she thinks it is critical to leave the options open so that more utilities can take advantage of making sure people are educated across the country. She concluded by commenting that one way in which they could improve the dissemination of information was by looking at the way in which the information is presented and what language is used. She stated that people want to know the facts and whether it is safe or not, but the current language used is very confusing.

Ms. Eisenberg replied that as the EPA moves forward and continues their outreach on electronic deliveries, they plan to have an informal discussion group on how to make the CCRs more understandable.

Ms. Bruno stated that she respectively disagrees with Ms. Weintraub and believes that option two is needed in the delivery options because it allows utilities the flexibility of reaching their customers in the best way they can.

Ms. Weintraub replied that she wanted to clarify that she believes option two and four are fine as adjuncts, but does not believe they are the best option as the sole way that a utility chooses to meet the requirement of direct delivery. She explained that perhaps the bigger issue is how it will be assessed that this is working, and maybe there is some piece that includes the utility providing evidence that electronic delivery is happening as promised by tracking downloads of the attachment or click-throughs on the website. Ms. Weintraub concluded that she just does not want to see a utility claiming they are using a particular method without producing some evidence that they are actually getting the information out.

Ms. Jonas stated that it is important that consumers understand their water systems and the safety of their drinking water. She asked what the resources were that they wanted the EPA to focus on in this situation and stated that regardless of whether it is a paper or electronic version of the CCR, you cannot force consumers to read it.

Ms. Morales stated that in a small system, many of them do not have the ability to do the additional step of guaranteeing that the CCR's are opened or read. She commented that she agreed with Ms. Jonas, and that you cannot force people to read the CCR once you get it to them. Ms. Morales explained that thousands of dollars are spent on mailing them and people just toss them in the trash. It is a personal choice and that choice is not going to change whether it is an electronic or a hard copy.

Ms. Vincent asked about slide seven and whether the information was available for the Council to read on the website or if they could get it from someone.

Ms. Barr asked Ms. Eisenberg if it is open to the public.

Ms. Eisenberg replied that the market research and the comments from the listening session are public; however, they had not put the rest in their docket yet, but they could.

Ms. Barr commented that they could just check with those organizations and that she has looked into them and thinks they are very interesting.

Ms. Morales asked if there were any other comments and questions. She stated that the consensus is that this is headed in right direction. She explained that regardless of what delivery is utilized, there will be challenges and you cannot get to 100% of population because the control is on the end of the customer. She concluded that the Council appreciates that the utilities will have the flexibility to try to reach their customer.

Mr. Zarate-Bermudez commented that although it was not his specialty, he thinks communication goes two ways, the communicator and the recipient and asked to consider that.

Ms. Corr thanked everyone for their comments yesterday on source water and today on CCRs.

Ms. Morales commented that they are due for a break, but asked the Council if they would like to continue with the agenda since they were almost finished. It was decided to keep going.

Ms. Godreau stated that she would like to make a motion that the Council recommend to EPA to move forward with the electronic delivery of CCRs for the 2013 CCR.

Ms. Morales asked for a second.

Multiple Council Members agreed, stated second.

Ms. Morales stated motion approved.

PRESENTATION FOR TERMS OF SERVICE AND POSSIBLE FUTURE ISSUES FOR COUNCIL'S NEXT MEETING

Pamela Barr, Acting Director, OGWDW; Olga Morales, NDWAC Chair

Ms. Morales stated that Ms. Barr will present the awards and that she wants everyone to think about agenda items for next meeting.

Ms. Barr commented that the Council would like to thank and honor the people who have served on the committee for their three-year term anniversary. She stated that there are three people who are in attendance and one who is absent, Doug Owens. Ms. Barr stated that his award will be mailed. She thanked all of the recipients for all the great advice and work.

Ms. Kennedy received award, letter and a plaque.
Mr. Johnson received award, letter and a plaque.
Ms. Weintraub received award, letter and plaque.

Ms. Morales thanked the three recipients and Doug.

PLANNING FOR THE SPRING 2013 MEETING, CLOSING REMARKS AND ADJOURN

Olga Morales, NDWAC Chair; Roy Simon, DFO, NDWA; Pamela Barr, Acting Director, OGWDW

Ms. Morales stated that she wanted to start discussing agenda items and what the Council would like to see at the next meeting.

Ms. Godreau commented that there will be updates on the perchlorate rule and CCR before the next meeting.

Mr. Simon noted that meeting in person is nice but meeting over webinar might be an option and that the second meeting may be a webinar as compared to a face-to-face meeting. He explained that it all depends on the budget and that they need to apprise the Office Director of what they might want to do in the future.

Ms. Morales stated that the next meeting will take place, depending on filling the member positions of the members stepping down. She explained that it could be April or May, but that they need a full Council before the next meeting and it is a lengthy process. Ms. Morales commented that in the past the Council has met at the end of spring and at the end of fall, but that it has a lot to do with the appointment of new council members. She concluded by asking for any other agenda items.

Ms. Weintraub asked if there was going to be hydraulic fracturing to discuss.

Mr. Johnson suggested the Total Coliform Rule.

Ms. Jonas recommended integration on water progress in relation to drinking water protection.

Multiple Council Members agreed.

Ms. Bruno proposed nitrosamines, if the timing is good for that.

Ms. Morales asked everyone to keep in mind that the next meeting might be a webinar and that they would not be sitting in front of the computer for a day and a half. She explained that they needed to prioritize topics based on EPA goals.

Ms. Barr told everyone to keep in mind that there would not be much to say about certain topics.

Ms. Godreau stated that the Lead Copper Rule will be finished in early 2013.

Ms. Barr replied that it would not be early, but should be 2013, just not early in the year.

Ms. Jonas recommended discussing the continuation of EPA's effort to combine contaminants, regulating group contaminants, especially the VOCs.

Mr. Zarate-Bermudez suggested a presentation on principles of epidemiology and a summary of different types of study designs.

Mr. Wiant stated that based on the upcoming election, it might be good to have a policy update to review the changes made by the administration.

Ms. Morales asked if the Council would be open to the idea of having more than one webinar since there is such a long list of topics to discuss.

Mr. Sawyers commented that they will evaluate the options.

Ms. Morales noted that it might work and that if there were no more comments the meeting could concluded. She thanked everyone for their contributions.

Ms. Morales adjourned the meeting.

Ms. Barr thanked everyone and told them to have a safe trip home.

Respectfully Submitted:	Certified as accurate:
/Signed/	*/Signed/*
_____	_____
Roy Simon	Olga Morales
DFO	Chair

Appendix I: Agenda

Thursday, October 4, 2012

Time	Presentation	Presenter
8:00-8:30 am	**Registration and Coffee & tea for Members**	None
8:30-9:00 am	**Welcome and Logistics** *Purpose: Introduce new members, describe logistics and review agenda for the meeting.*	Olga Morales, NDWAC Chair, Tinka Hyde, Director, Water Division USEPA-Region 5 Roy Simon, DFO, NDWAC
9:00-10:00 am	**Title: Welcome and Update on OGWDW Priorities and Regulatory Developments** *Purpose: Presentation and discussion of national drinking water priorities for the year and regulatory developments.*	Pamela Barr, Acting Director, Office of Ground Water and Drinking Water (OGWDW) Phil Oshida, Acting Director, Standards and Risk Management Branch, OGWDW
10:00 – 10:15 am	**BREAK**	None
10:15 – 11:45 am	**Title: Consultation: Perchlorate Rule** *Purpose: Consultation for the proposed rule.* *Perchlorate background* *Regulatory history of perchlorate in drinking water* *Safe Drinking Water Act (SDWA) requirements for the development of National Primary Drinking Water Regulations (NPDWR)* *Science Advisory Board (SAB) review* *Stakeholder involvement* *Analytical Methods* *Treatment Technologies*	Pamela Barr and Eric Burneson, Chief, Targeting and Analysis Branch, OGWDW
11:45 am -1:00 pm	**LUNCH**	None

Time	Presentation	Presenter
1:00 – 1:10 pm	**Title: Statements by Members of the Public on Perchlorate**	Roy Simon, DFO Facilitates
1:10-2:30 pm	**Title: Council Discussion on proposed Perchlorate Rule** *Purpose: Consult with Council on actions underway to develop the rule.*	Olga Morales and Pam Barr
2:30-3:00 pm	**BREAK**	None
3:00-4:00 pm	**Title: Region 5 Presentation on Small Drinking Water Systems and Building Partnerships** *Purpose: Discussion of Building Partnerships among small systems to share services and thus build capacity.* *Overview of Small System Collaborations in Region 5* *Round-Robin with NDWAC on optional approaches to shared-services through partnerships.*	Tinka Hyde, Director, Water Division USEPA-Region 5 Tom Poy, Chief, Ground Water and Drinking Water Branch, USEPA-Region 5 Andrew Sawyers, Deputy Director, OGWDW
4:00-4:30 pm	**Title: Source Water Protection** *Purpose: Presentation on possible EPA OW priorities.* Overview of SDWA's source water protection framework Source Water Protection through Clean Water Act programs Discussion topics: How to define objectives; decide where to start; and reach out to the public.	Elizabeth Corr, Associate Director, Drinking Water Protection Division, OGWDW Yu-Ting L. Guilaran, P.E. Associate Director Assessment & Watershed Protection Division Office of Wetlands, Oceans, and Watersheds

Time	Presentation	Presenter
4:30-5:00 pm	**Title: Council Discussion on Source Water Protection (SWP)** *Purpose:* *Consult with Council on:* *SWP priorities including SDWA/CWA collaboration*	Olga Morales; Elizabeth Corr; Yu Ting Guilaran and Pam Barr
5:00 – 5:30 pm	***Wrap-Up of First Day***	Olga Morales and Roy Simon
5:30 – 6:30 pm	*Break and Relax Before Dinner*	None
6:30 pm	**GROUP DINNER – Rosebud Theater District 70 West Madison Street near Madison and Dearborn Street**	None

Friday, October 5, 2012

Time	Presentation	Presenter
8:00-8:30 am	**Coffee & tea for Attendees**	None
8:30-9:30 am	**Title: Recap First Day's Discussion** Purpose: Summarize First Day's discussion with Members	Olga Morales; Roy Simon; and Pam Barr
9:30-10:00 am	**Title: Consultation: Consumer Confidence Report (CCRs) Existing Rule** Purpose: Presentation on EPA's Retrospective Review of the CCR Rule, including EPA's proposed approach for electronic delivery of CCRs: Overview of Retrospective Review Methods for electronic delivery of CCRs Approaches and considerations to implementing electronic delivery	Elizabeth Corr & Mindy Eisenberg, Chief, Protection Branch, DWPD OGWDW (on the phone)

Time	Presentation	Presenter
10:00 – 10:15 am	**BREAK**	None
10:15 -11:30 am	**Title: Council Discussion on CCRs** Purpose: Consult with Council on EPA's approach for the electronic delivery of CCRs	Olga Morales; Elizabeth Corr; Mindy Eisenberg
11:30 am – 12:00 pm	**Title: Presentations for Terms of Service and Possible Future Issues for Council's next meeting.**	Pam Barr and Olga Morales
12:00 – 1:00 pm	**Lunch**	None
1:00 – 2:00 pm	**Title: Statements by Members of the Public**	Roy Simon
2:00 -3:00 pm	**Closing Summary and ADJOURN**	Olga Morales and Roy Simon

Status Report on EPA Regulations

Phil Oshida

Acting Director

Standards and Risk Management Division

Office of Ground Water and Drinking Water

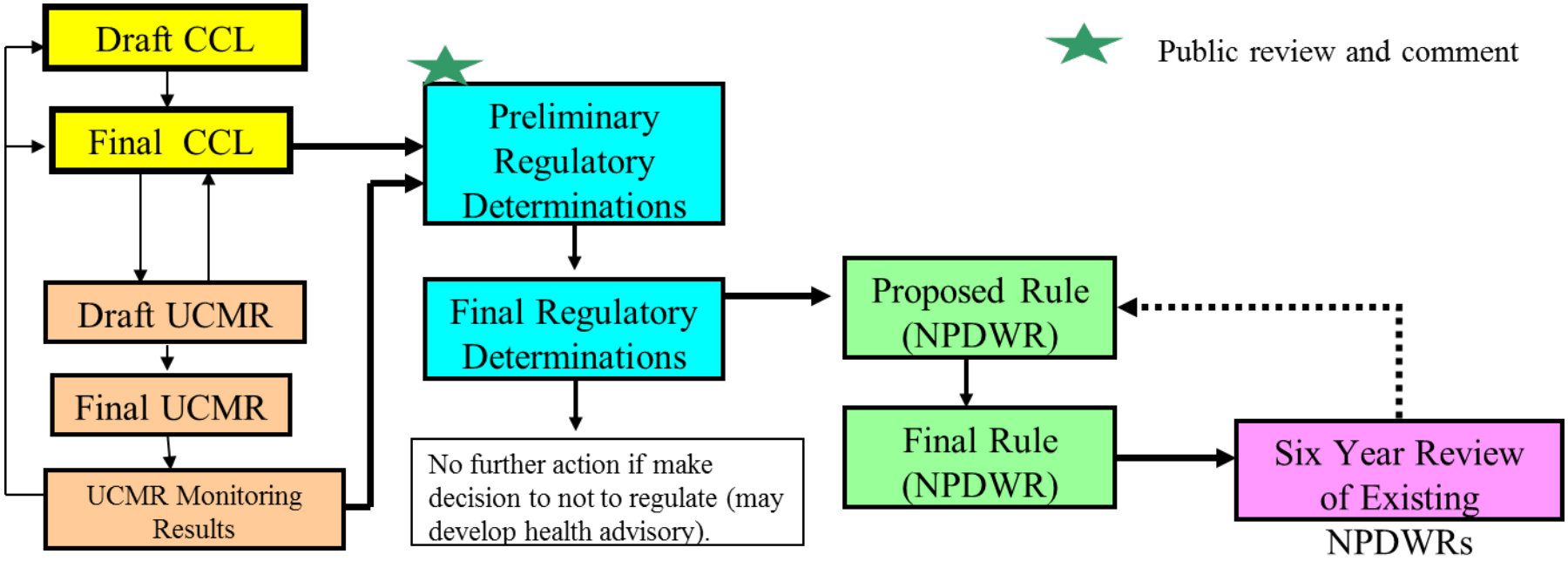
Overview

Rule Development and Other Actions

- Contaminant Candidate List (CCL)
- Unregulated Contaminant Monitoring Rule (UCMR)
- Regulatory Determination process
- Regulation Development
- Six-Year Review & Other Regulatory Reviews/Revisions

Rule Development and Other Actions

General Flow of SDWA Regulatory Processes



At each stage, need increased specificity and confidence in the type of supporting data used (e.g. health, occurrence, treatment).

CCL
Contaminant Candidate List

Contaminant Candidate List 4 (CCL 4)

- Spring 2012- Invite public to nominate contaminants to be considered for inclusion in CCL 4
  - May-June 2012
  - Nominations submitted via the web and mail
- Summer 2013- Expect to publish Draft CCL 4 for public review and comment
- October 2014- Expect to publish Final CCL 4

UCMR

Unregulated Contaminant Monitoring Regulation

UCMR 2: Final Results

- Monitoring Jan. 2008 – Dec. 2010; reporting concluded 2011, final data posted to web Feb 2012
- 25 contaminants monitored, including brominated flame retardants; nitrosamines; explosives; insecticides, pesticides, degradates
- Results are posted on the Web (NCOD) at: http://water.epa.gov/lawsregs/rulesregs/sdwa/ucmr/data.cfm
- 13 of 25 contaminants were not detected
- Detections above method reporting limits:
  - 5 of 6 nitrosamines (predominantly NDMA)
  - 6 of 11 insecticides/pesticides/degradates
  - 1 of 3 explosives

UCMR 3

- Proposal published March 3, 2011
- Final rule published May 2, 2012
- *water.epa.gov/lawsregs/rulesregs/sdwa/ucmr/ucmr3/index.cfm*
- Monitoring will occur from 2013-15
- 28 chemicals and 2 viruses
- Contaminants include hormones, perfluorinated compounds (e.g., PFOS/PFOA), VOCs, metals (including Cr-6 and total Cr), 1,4-dioxane, chlorate and pathogens

UCMR 3 – Contaminants

- Pharmaceuticals (EPA Method 539)
  - 17-α-ethynylestradiol
  - 17-β-estradiol
  - equilin
  - estriol
  - estrone
  - testosterone
  - 4-androstene-3,17-dione

- Metals (EPA Method 200.8)
  - cobalt
  - molybdenum
  - strontium
  - vanadium
  - (total) chromium

•EPA Method 218.7
- hexavalent chromium

• Volatile Organic Compounds (EPA Method 524.3)
- - 1,1-dichloroethane
- - 1,2,3-trichloropropane
- - 1,3-butadiene
- - bromochloromethane
- - chlorodifluoromethane
- - chloromethane
- - methyl bromide

• EPA Method 522
- 1,4-dioxane

• EPA Method 300.1
- chlorate

UCMR 3 – Contaminants (cont.)

- Microbials
  - 2 viruses
    - enterovirus (qPCR & cell culture)
    - norovirus (qPCR)
  - "Indicator organisms"
    - Total coliform
    - *E. coli*
    - enterococci
    - coliphage
    - aerobic spores
- Perfluorinated Chemicals (EPA Method 537)
  - Perfluorooctane sulfonate (PFOS)
  - Perfluorooctanonic acid (PFOA)
  - Perfluoroheptanoic acid (PFHpA)
  - Perfluorononanoic acid (PFNA)
  - Perfluorobutane sulfonic acid (PFBS)
  - Perfluorohexane sulfonic acid (PFHxS)

Hexavalent Chromium

- **Drinking Water Standard**
  - Total Chromium (Cr^{+3} & Cr^{+6}) MCL is 0.1 mg/L (100 ppb) established in 1991
  - When toxicological review is completed, EPA will consider all relevant information to determine whether the drinking water standard for total chromium needs to be revised.
- **Toxicological Review**
  - Sept 2010, peer review draft IRIS Toxicological Review of Cr^{+6} proposed to classify Cr^{+6} as likely to be carcinogenic to humans when ingested.
  - Based on the recommendations of an external peer review panel, EPA will consider the results of recent research on Cr^{+6} before finalizing the IRIS assessment.
  - EPA anticipates that a revised draft assessment for Cr^{+6} will be released for public comment and external peer review in 2013, and that a final assessment will be completed by 2015.
- **Monitoring**
  - January 2011 - EPA provided guidance to water systems on enhanced monitoring and analysis for Cr^{+6}.
  - May 2012 - EPA included Cr^{+6} monitoring requirement in final UCMR 3.

Regulatory Determinations

Three Regulatory Determination Criteria

SDWA requires EPA to consider the following criteria in evaluating whether to regulate a contaminant:

***1**) The contaminant may have an adverse effect on the health of persons;*

***2**) The contaminant is known to occur or there is substantial likelihood that the contaminant will occur in public water systems with a frequency and at levels of public health concern; and*

***3**) In the sole judgment of the Administrator, regulation of such contaminant presents a meaningful opportunity for health risk reduction for persons served by public water systems.*

Potential Outcome of Determinations

- **No Regulatory Determination**
  - Insufficient data to assess contaminant against the three statutory criteria

- **Positive Determination**
  - Answer "yes" decision for "all three" criteria
  - Begin process to develop a drinking water regulation

#	Outcome
1	✓
2	✓
3	✓

- **Negative Determination**
  - Answer "no" for "any one" of the three criteria
  - Do not develop a drinking water regulation
  - Can develop a health Advisory as a non-regulatory option

#	Outcome
1	✓
2	X
3	X

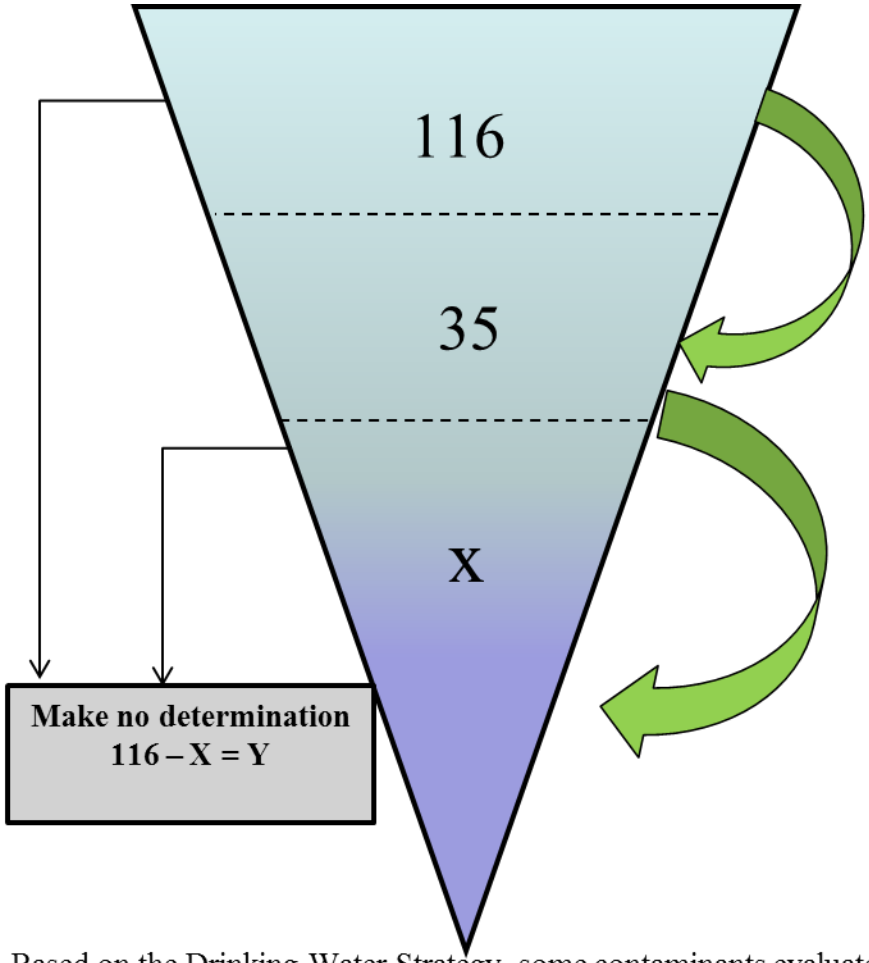
Status of Regulatory Determinations 3 (RD3)

- Since CCL3 publication (Oct 2009), gathered & evaluated available health and occurrence information for 116 contaminants

- June 2011 – Held Stakeholder meeting in DC to discuss health and occurrence information for a short list of contaminants; meeting materials can be found at: : http://water.epa.gov/scitech/drinkingwater/dws/ccl/index.cfm

- Oct 2011 – Held Expert Review meeting

RD3 Approach – Three Main Phases



Phase 1 - Data Availability: Evaluated 116 CCL contaminants and identified 35 that "appear" to have sufficient health and occurrence data to warrant further evaluation.

Phase 2 - Data Evaluation: Further evaluating health and occurrence data for 35 contaminants to identify "X" contaminants that have complete information in time for regulatory determinations; focusing on contaminants with known or likely occurrence at levels of health concern in water systems.

Phase 3 - Regulatory Determination Assessment: Evaluate information for "X "contaminants against the three SDWA criteria – (1) adverse health, (2) known/likely occurrence in PWSs and (3) meaningful opportunity (sole judgment of Administrator).

Based on the Drinking Water Strategy, some contaminants evaluated as a group for RD3 and some are on a separate track

Short List of 35 Contaminants Being Further Evaluated for Regulatory Determinations 3

- 1,1,1,2-Tetrachloroethane
- 1,2,3-Trichloropropane (TCP)
- 1,3-Dinitrobenzene
- 1,4-Dioxane
- Methyl Tertiary Butyl Ether (MTBE)
- Methyl Bromide
- Nitrobenzene
- PFOS and PFOA
- RDX
- Cobalt
- Molybdenum
- Strontium
- Vanadium
- Acephate
- Dimethoate
- Disulfoton
- Diuron
- Molinate
- Terbufos and Terbufos Sulfone
- Acetochlor & ESA and OA Degradates
- Alachlor ESA & OA Degradates
- Metolachlor & ESA and OA Degradates
- Chlorate
- Nitrosamines (5)
  - N-nitrosodimethylamine (NDMA)
  - N-nitrosodiethylamine (NDEA),
  - N-nitrosodi-n-propylamine (NDPA)
  - N-nitrosopyrrolidine (NPYR)
  - N-nitrosodiphenylamine (NDPhA)

Nitrosamines Being Evaluated as a Group for RD3

Four DWS Factors	• All are carcinogens so likely MCLG could be set at zero • Can measure most nitrosamines using common analytical methods • Most have common treatment/control processes • Have some co-occurrence of NDMA with other nitrosamines
Public Health Benefit	• ~100M people served by systems with at least single detection of at least one of the nitrosamines • ~10M people served by systems that have co-occurring nitrosamines; potential for greater public health risk due to additivity of cancer risk • Approach to controlling nitrosamines may reduce exposure to other DBPs
Issues	• Exposure from food may be > drinking water for some age groups but drinking water is the primary exposure source for bottle-fed infants • Constraining chloramine use to reduce nitrosamines could make it more difficult to comply with prior DBP rules • Also, some questions about other ways that nitrosamines may be formed

Next Steps for Regulatory Determinations (RD3)

- Finish compiling/evaluating occurrence & health information.
- Expect to publish preliminary determinations in 2012/2013.
- Expect to publish final determinations in 2013/2014.

Perchlorate

Perchlorate Status

- The status of the development of a Perchlorate Regulation will be covered in the next presentation, “Consultation on the Regulation of Perchlorate in Drinking Water,” by Mr. Eric Burneson.

Six-Year Review and Other Regulation Reviews/Revisions

Revised Total Coliform Rule

- Identified in Six-Year Review 1 as needing revision
- EPA published the proposed revisions to the TCR in the *Federal Register* on July 14, 2010
  - The proposal was based on the Agreement in Principle signed by the Federal Advisory Committee in September 2008
  - The proposal takes a more proactive approach to public health protection
  - Monitoring results shift from informing public notification to informing investigation and corrective action
- Hope to promulgate final rule in 2012

Carcinogenic VOCs Group

- TCE and PCE were identified in Six-Year Review 2 as needing revision.
- EPA has initiated the process to develop a group cVOC standard and will:
  - Develop a group NPDWR for regulated and unregulated carcinogenic VOCs (cVOCs) that improves or maintains public health protection.
  - Assess potential cVOCs for the group based upon similar health effect endpoints; common analytical method(s); common treatment or control processes; and occurrence/co-occurrence in drinking water.
  - Evaluate options for setting a cVOC MCL(s) and examine the feasibility of analytical methods & treatment technologies, and costs/benefits for the group.
  - Hold consultations from 2012 - 2013:
    - Public Stakeholder meeting
    - Science Advisory Board
    - National Drinking Water Advisory Council
    - Small Business Regulatory Enforcement Fairness Act (SBREFA)
    - National Tribal Water Council
- EPA expects to propose a regulation in Fall 2013.

Lead and Copper Rule Revisions

- Lead and Copper Rule promulgated in 1991
- Revised in 2000 and 2007

Long-term Issues	
Lead service line replacement (LSLR)	• Engaged SAB (2011), and NDWAC (2011-12). • Evaluating revisions to the LSLR requirements.
Sample Site Selection	• Evaluating revisions to the criteria better address the latest information about lead sources
Tap sampling	• Evaluating different protocols for collecting tap samples for lead and copper
Measures to ensure optimal corrosion control treatment (OCCT)	• Evaluating OCCT requirements to better ensure optimal corrosion control and effective water quality parameters monitoring
Copper	•Evaluating approaches to better address copper
Lead Reduction in Drinking Water Act of 2011	•Incorporate changes new definition of "Lead Free" from Lead Reduction in Drinking Water Act

Lead and Copper Rule Revisions Outreach and Consultations

- Stakeholder meetings October 2008 and November 2010
- Science Advisory Board 2011 review of partial lead service line replacement
- NDWAC consulted in 2011 on range of lead and copper rule issues.
- Stakeholder Meeting on the Lead Reduction in Drinking Water Act August, 2012
- EPA intends to publish the proposed LCR long-term revisions in early 2013.

Six Year Review 3 Background

- 1996 SDWA Amendments require EPA to review and, if appropriate, revise existing National Primary Drinking Water Regulations (NPDWRs) every 6 years.
  - 2003: completed first Six Year Review of 69 NPDWRs; made decision to revise TCR
  - 2010: completed second Six Year Review of 71 NPDWRs; made decisions to revise tetrachloroethethylene (PCE), trichloroethylene (TCE), acrylamide and epichlorohydrin
- Occurrence analysis is a key component in the 6-year review process.
  - Limited occurrence data set (representing 16 States) used for first Six Year Review.
  - Early 2005: EPA Information Collection Request (ICR) to gather a more robust dataset; allows EPA to ask States to voluntarily submit their occurrence data.
  - Overwhelming State response - 46 States plus several tribes, territories and DC. These data are the largest, most comprehensive set of drinking water compliance monitoring data ever compiled and analyzed by EPA and were instrumental in decision making.

Six Year Review 3
Occurrence Data Collection

- OGWDW to send a formal request for data to the States in fall 2012.
  - We encourage States to participate in this data collection effort.
- We will be asking for data for the period of January 2006 to December 2011.
- Our goal for the data collection is to make the procedure(s) as easy as possible for the States.
  - States can submit data in virtually any electronic format including: upload to a File Transfer Protocol site; sending a CD, using extraction script for SDIWS/State users
- Once data are QA/QC'd and analyzed for Six Year Review purposes, they will be stored in the National Contaminant Occurrence Database (NCOD).

Review of Long Term 2 Enhanced Surface Water Treatment (LT2) Rule

- Aug 2011, EPA announced plans to initiate LT2 review in response to E.O. 13563
- Review will be part of the next cycle of the SDWA-mandated Six Year Review scheduled for completion no later than 2016
- Review involves assessment and analysis of data/information on occurrence, treatment, analytical methods, health effects, and public health risks

Review of Long Term 2 Enhanced Surface Water Treatment (LT2) Rule Continued

- Dec 2011, EPA held a public meeting to discuss LT2 Round 1 *Crypto* monitoring data and improvements to the *Crypto* analytical method
- Apr 2012, EPA held a public meeting to solicit input and discuss available scientific data that may inform regulatory review of the uncovered finished water reservoir requirement
- Nov 2012, EPA plans to hold a public meeting to discuss data and information related to monitoring, binning, and microbial toolbox options

Thank You!

Appendices

Appendix A. Contaminants on the Second Unregulated Contaminant Monitoring Regulation (UCMR 2)

10 Assessment Monitoring

- 3 Explosive
  - hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)
  - 2,4,6-trinitrotoluene (TNT)
  - 1,3-dinitrobenzene

- 7 Insecticides and Flame Retardants
  - Dimethoate
  - Terbufos sulfone
  - **5 Brominated Flame Retardants**

15 Screening Survey

- 9 Acetanilide pesticides/degradation products
  - **Acetochlor**
  - **Acetochlor ESA**
  - **Acetochlor OA**
  - **Alachlor**
  - **Alachlor ESA**
  - **Alachlor OA**
  - **Metolachlor**
  - **Metolachlor ESA**
  - **Metolachlor OA**

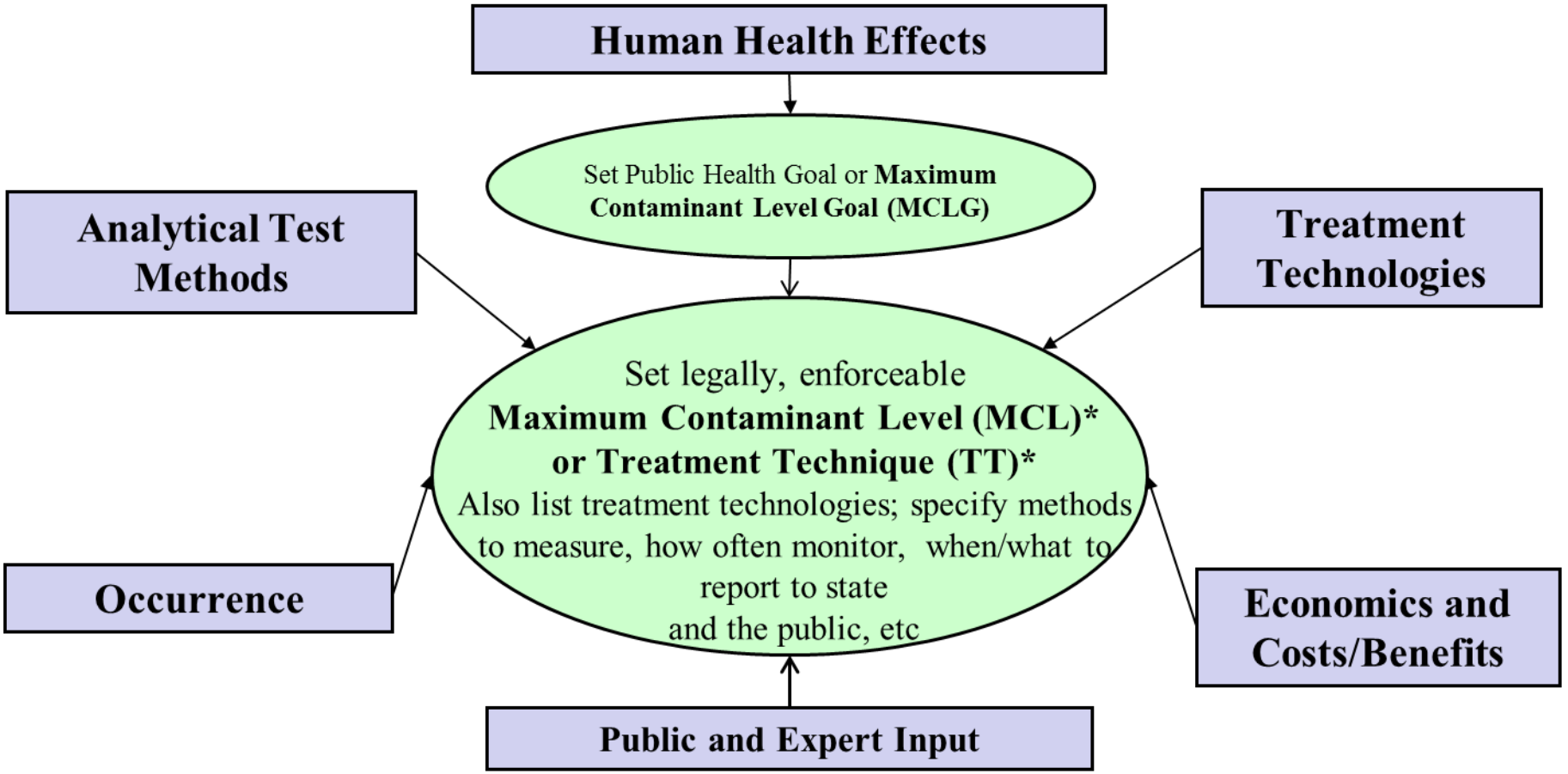
- 6 Nitrosamines
  - **N-nitroso-diethylamine (NDEA)**
  - **N-nitroso-dimethylamine (NDMA)**
  - **N-nitroso-di-n-butylamine (NDBA)**
  - **N-nitroso-di-n-propylamine (NDEA)**
  - **N-nitroso-methylethylamine (NMEA)**
  - **N-nitroso-pyrrolidine (NPYR)**

EPA

Appendix B. How We Evaluate the Three SDWA Criteria

#	Statutory Criteria	Information To Consider During Evaluation
1	**Adverse effect on the health of humans?**	• Potential adverse health effect(s) (e.g., cancer, thyroid, liver damage) and level at which effect occurs (i.e., level of concern)
2	**Known or likely to occur in PWSs at a frequency and level of concern?**	• National monitoring data from PWSs and whether it occurs in drinking water at the health level of concern • Other sources of information (e.g., state PWS data, levels in source waters, how much is used/produced, etc.)
3	**In the sole judgment of the Administrator – is there a meaningful opportunity for health risk reduction for persons served by PWSs?**	Consider variety of factors which include: • Number of people who may be exposed to the contaminant from drinking water (served by PWSs) • Health effect and potential impact on sensitive populations (e.g., children, elderly, compromised immune systems) • National versus local occurrence in drinking water • Exposure from water versus other sources (e.g., food, air); primarily for non-cancer

Appendix C - What Factors Do We Consider and How Do We Develop Standards?



*** Maximum Contaminant Level (MCL)** - the highest level or amount of a contaminant that EPA allows in drinking water.
***Treatment Technique (TT)** – a prescribed process intended to reduce the level of a contaminant in drinking water.

Consultation on the Regulation of Perchlorate in Drinking Water

Eric Burneson,

Chief, Targeting and Analysis Branch,
Office of Ground Water and Drinking Water, U.S. EPA

October 4, 2012

Consultation Overview

- Perchlorate background
- Regulatory history of perchlorate in drinking water
- Safe Drinking Water Act (SDWA) requirements for the development of National Primary Drinking Water Regulations (NPDWR)
- Science Advisory Board (SAB) review
- Stakeholder involvement
- Analytical Methods
- Treatment Technologies

What is Perchlorate?

- Perchlorate is an inorganic ion, ClO_4^-
- Occurs primarily as a salt.
  - The most commonly used salts include ammonium perchlorate and potassium perchlorate
- Variety of industrial uses, it is primarily used in the form of ammonium perchlorate as an oxidizer in solid fuels to power rockets, missiles, and fireworks.
- Perchlorate also occurs naturally:
  - Calcium carbonate deposits of arid or semiarid regions (e.g., the High Plains of Western U.S.A.)
  - Atmospheric processes
- An impurity in disinfectant (hypochlorite) solutions
- Highly soluble, dissociates completely
- Conventional treatment will not remove it

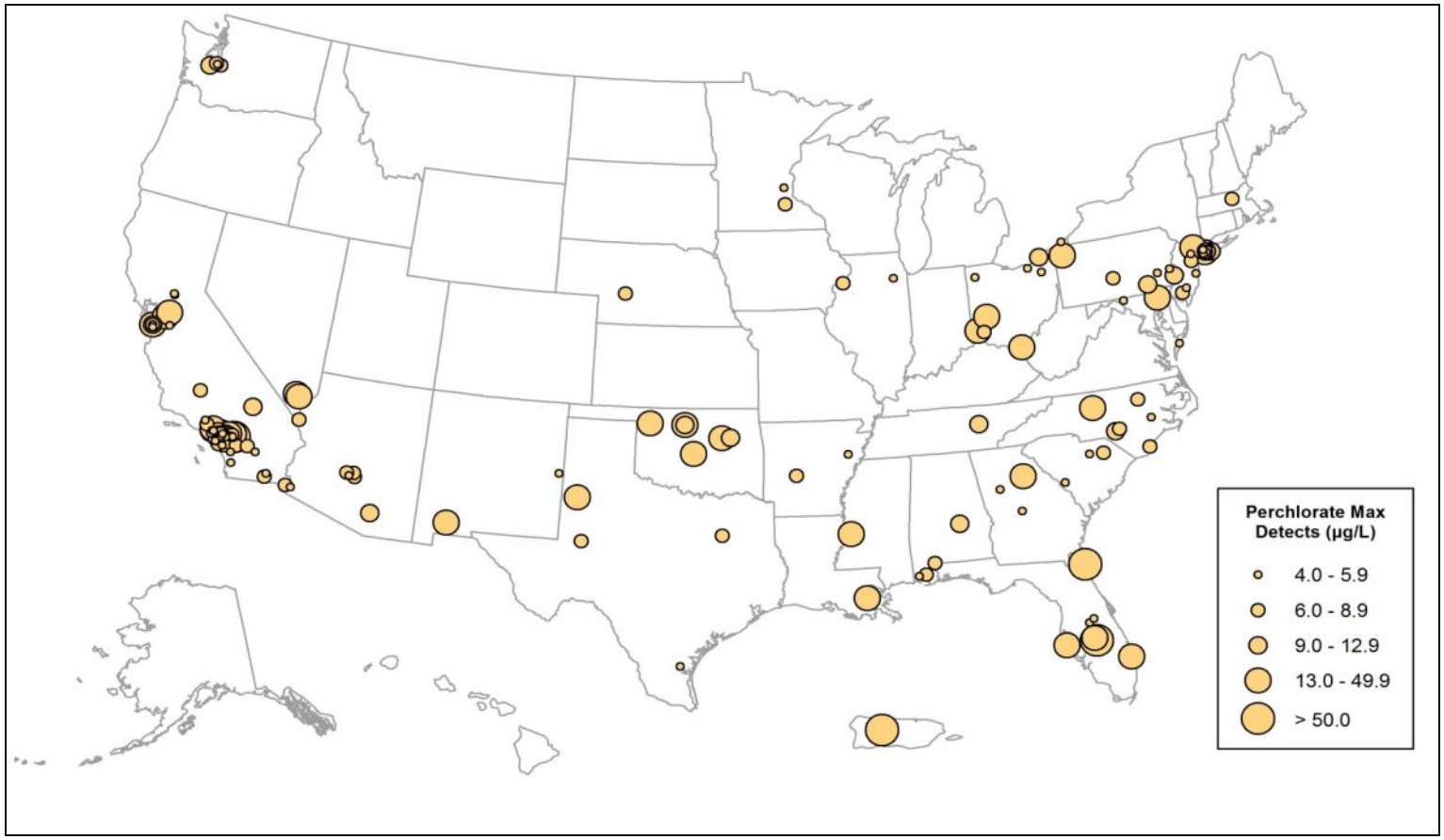
What are the Effects of Perchlorate?

- Perchlorate interferes with the thyroid gland by inhibiting iodide uptake.
- Reduced iodide uptake by the thyroid impacts the amount of thyroid hormones produced.
- Thyroid hormones are critical for normal growth and development.
- Poor iodide uptake and subsequent impairment of thyroid function in pregnant and lactating women are linked to delayed development and decreased learning capability in their infants and children.

How are People Exposed to Perchlorate?

- Food
  - Food and Drug Administration's Total Diet Study (2005 – 2006)
    - Detectable levels of perchlorate found in 74% (211 of 285) of foods
    - The range of average estimated perchlorate intakes was 0.08 to 0.39 µg/kg/day
  - Centers for Disease Control's infant formula study (2009)
    - Perchlorate found in all brands/types tested
- Drinking water
  - EPA's Unregulated Contaminant Monitoring Rule (2001 – 2005)
    - 4.1% of public water systems (160/3,865) reported at least 1 perchlorate detection
    - 2.3% to 7.3% of the population served by the sampled systems estimated to be exposed to perchlorate (5.1 M to 16.6 M people) from drinking water

System–Level Geographic Distribution of Perchlorate



Perchlorate in Drinking Water Regulatory History

- March 2, 1998, February 24, 2005, and October 8, 2009 EPA included perchlorate on the first, second, and third Contaminant Candidate Lists.
- October 10, 2008, EPA published a preliminary regulatory determination for perchlorate (73 FR 60262), requesting public comment on its determination that a NPDWR for perchlorate would not present a meaningful opportunity for health risk reduction for persons served by public water systems.
- August 19, 2009, EPA published the *Perchlorate Supplemental Request for Comments* (74 FR 41883) requested comment on additional approaches to analyzing data. EPA stated that the alternative analyses could lead the Agency to make a determination to regulate perchlorate.
- On February 11, 2011 (76 FR 7762), EPA announced its decision to regulate perchlorate based on its finding that perchlorate meets the SDWA's three criteria for regulating a contaminant.

  1. Perchlorate may have adverse health effects,
  2. There is a substantial likelihood that perchlorate occurs with frequency at levels of health concern in public water systems, and
  3. There is a meaningful opportunity to reduce risk through a drinking water regulation.

SDWA Requirements for the Development of NPDWRs

- Once EPA makes a determination to regulate a contaminant in drinking water, Section 1412(b)(1)(A) requires that EPA issue a proposed NPDWR within 24 months and a final NPDWR within 18 months after the proposal (the statute allows a nine month extension of this promulgation date).
- Section 1412(a)(3) requires EPA to propose an MCLG simultaneously with the NPDWR.
  - The MCLG is "the level at which no known or anticipated adverse effects on the health of persons occur and which allows an adequate margin of safety."
  - Non enforceable public health goal
- Section 1412(b)(4)(B) states that the MCL will be set as close to the MCLG as is feasible.
  - "Feasible" means with the use of the best technology, treatment techniques and other means which the Administrator finds are available (taking cost into consideration)
  - EPA evaluates both treatment technologies and the analytical methods
  - Examines for efficacy under field conditions (not solely under laboratory conditions)

SDWA Requirements for the Development of NPDWRs (continued)

- For treatment technologies, EPA is required to:
  - List treatment technologies and techniques capable of meeting an MCL referred to as Best Available Technologies (BAT)
  - Also list Small System Compliance Technologies (SSCTs)
    - SSCTs are technologies that achieve compliance with the MCL and that are determined to be affordable for small systems

BAT & SSCT

- EPA evaluates the following criteria to identify BAT:
  - Capability for high removal efficiency;
  - A history of full scale operation;
  - General geographic applicability;
  - Reasonable cost (for large systems);
  - Service life;
  - Compatibility with other water treatment processes; and
  - Ability to bring all of the water in a system into compliance.
- In addition to the criteria for BAT's, EPA also evaluates the following criteria for SSCTs
  - Affordability of the treatment at households in systems serving 25- 500 people, 501 – 3,300 people, and 3,301 – 10,000 people
  - Considers packaged or modular systems, and point of entry (POE) and point of use (POU) systems

SDWA Requirements for the Development of the Health Risk Reduction and Cost Analyses (HRRCA)

- When proposing an MCL, EPA must publish, and seek comment on, the HRRCA of each alternative MCL considered (section 1412(b)(3)(C)(i)).
  - Estimates of the quantifiable and non-quantifiable health risk reduction benefits
  - Estimates of the quantifiable and non-quantifiable costs of compliance (monitoring treatment and other costs
  - Incremental costs and benefits of each alternative MCL considered
  - Effects of a contaminant on the general population, and on groups within the general population, such as infants, children, pregnant women, the elderly, individuals with a history of serious illness, or other subpopulations that are identified as likely to be at greater risk of adverse health effects due to exposure to contaminants in drinking water than the general population.
  - Any increased health risk that may occur as the result of compliance
  - Other relevant factors including quality and extent of information as well as uncertainties.

Science Advisory Board Review

- In accordance with section 1412(d) and (e), the Agency initiated SAB review on how to consider available scientific data in deriving an MCLG for perchlorate.
- Panel formation began in December of 2011
- EPA charged the SAB with providing input on four issue areas related to the development of a perchlorate MCLG:
  - How should EPA consider sensitive life stages?
  - How should EPA consider physiologically-based pharmacokinetic (PBPK) modeling?
  - How should EPA consider post-RfD epidemiology data?
  - How can EPA best use the total body of information?
- July 18-19, 2012: Advisory Panel meeting
- September 5, 2012: Draft "SAB Advisory Report on Approaches for Deriving an MCLG for Perchlorate"
- September 25, 2012: SAB Perchlorate Advisory Panel Teleconference to discuss draft report

Science Advisory Board Review (continued)

- SAB next steps:
  - Revise report for Panel consensus based on public teleconference
  - Chartered SAB QA review teleconference
  - Revise Quality Review Draft for Chartered SAB approval of Final Report
  - Final Report to the Administrator
- See "Public Involvement in Advisory Activities" http://yosemite.epa.gov/sab/sabproduct.nsf/WebSABSO/PublicInvolvement?OpenDocument
- For further information contact the SAB DFO, Thomas Carpenter at 202-564-4885

Stakeholder Involvement

- Stakeholder involvement to date
  - Environmental Justice Public Meeting – March 2011
  - Tribal consultation and coordination: September 2011 – National Tribal Water Council; Tribes in January 2012; February 2012; and May 2012
  - SAB Perchlorate Advisory Panel meeting – July 18 and 19
  - Public Stakeholder Meeting – focus on treatment technologies and analytical methods – September 20, 2012
  - SAB Perchlorate Advisory Panel Teleconference – September 25, 2012

- Upcoming Actions
  - SAB Perchlorate Advisory Panel Teleconference
  - SAB Quality Assurance Review
  - Small entity representative input in accordance with the Small Business Regulatory Enforcement Fairness Act (SBREFA)
  - Notice of proposed rulemaking – SDWA deadline February, 2013

U.S. EPA Analytical Methods for the Analysis of Perchlorate in Drinking Water

Analytical Methods for the Analysis of Perchlorate in Drinking Water

- Early Ion Chromatography (IC) methods
  - 1997 by CA Dept. of Health Services and in 1998 by Dionex Corporation
- EPA Method 314.0, revision 1.0, November 1999 (used for UCMR 1)
  - IC Method with suppressed conductivity detection
  - Minimum Reporting Level (MRL) of 4.0 ug/L with detection limit (DL) of 0.5 ug/L
- Method 314.1, revision 1.0, May 2005
  - Lowered MRL to < 0.2 ug/L (DL 0.03 ug/L) using online sample pre-concentration
- Method 314.2, version 1.0, May 2008
  - Lowered MRL to < 0.1 ug/L (DL 0.02 ug/L) using large volume injection 2-D analysis
- Method 331.0, revision 1.0, January 2005
  - Lowered MRL to < 0.1 ug/L (DL < 0.01 ug/L) by applying multiple analytical advancements to an LC/MS or LC/MS/MS analysis
- Method 332.0, revision 1.0, March 2005
  - Lowered MRL to 0.1 ug/L (DL 0.02 ug/L) by applying multiple analytical advancements in an IC/MS analysis

Perchlorate Analytical Methods

Method	Expected Reporting Limit (ug/L)	MDL (ug/L)	Cycle Time Minutes	Acceptable Performance in 1000mg/L TDS	Confirmation	Complexity	Relative Cost
314.0	4.0	0.53	11	No	Matrix Spike Assessment	Moderate	$45 - $85
314.1	0.14	0.03	25 (50 with confirmation)	Yes	Second Column Analysis	High	$60 - $110
314.2	0.06	0.018	37	Yes	2-D	High	$60 - $110
331.0	0.022 (MS/MS) 0.056 (SIM)	0.005 (MS/MS) 0.008 (SIM)	9	Yes	MS/MS or MS	Moderate	$80 - $180
332.0	0.10 (SIM)	0.02 (SIM)	8	Yes	MS	Moderate	$80 - $180

Perchlorate Treatment Technologies

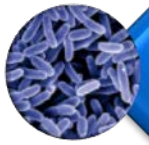
Perchlorate Compliance Options

- Non-Treatment Options

- Treatment Technologies

Treatment Technologies


Anion exchange (AX)


Biological treatment

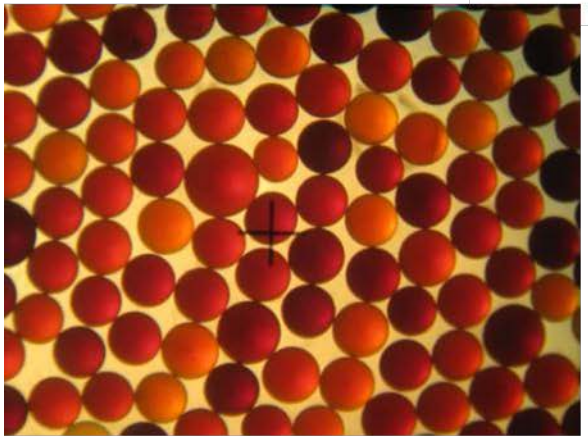

Reverse osmosis (RO)

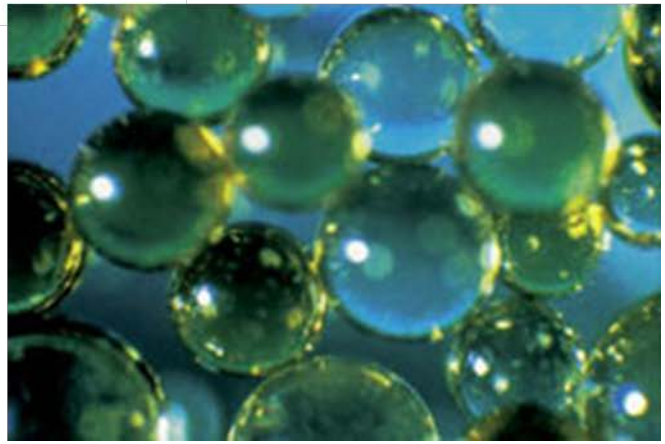

Point-of-use reverse osmosis (POU RO)

Ion Exchange Technology

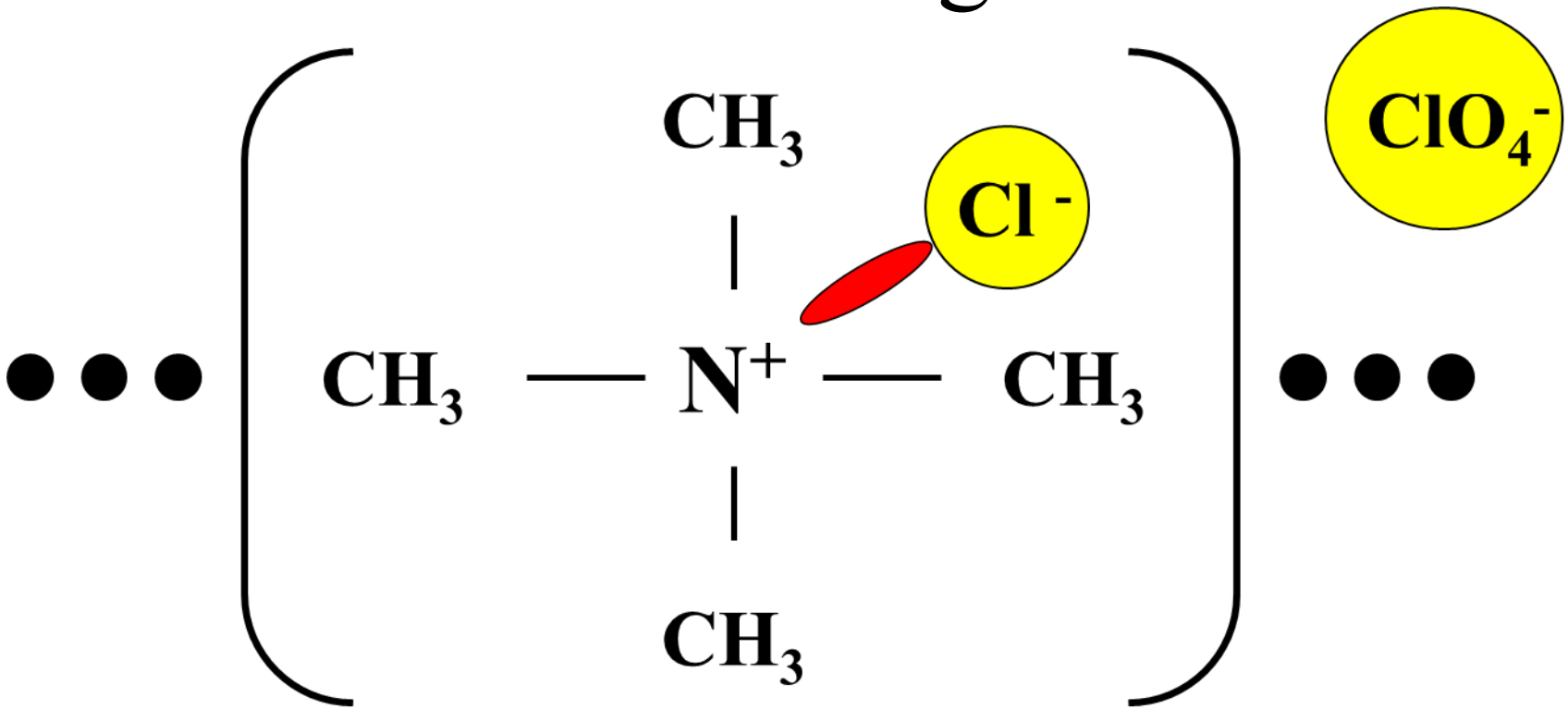
Ion Exchange Vessel

Ion Exchange Resins

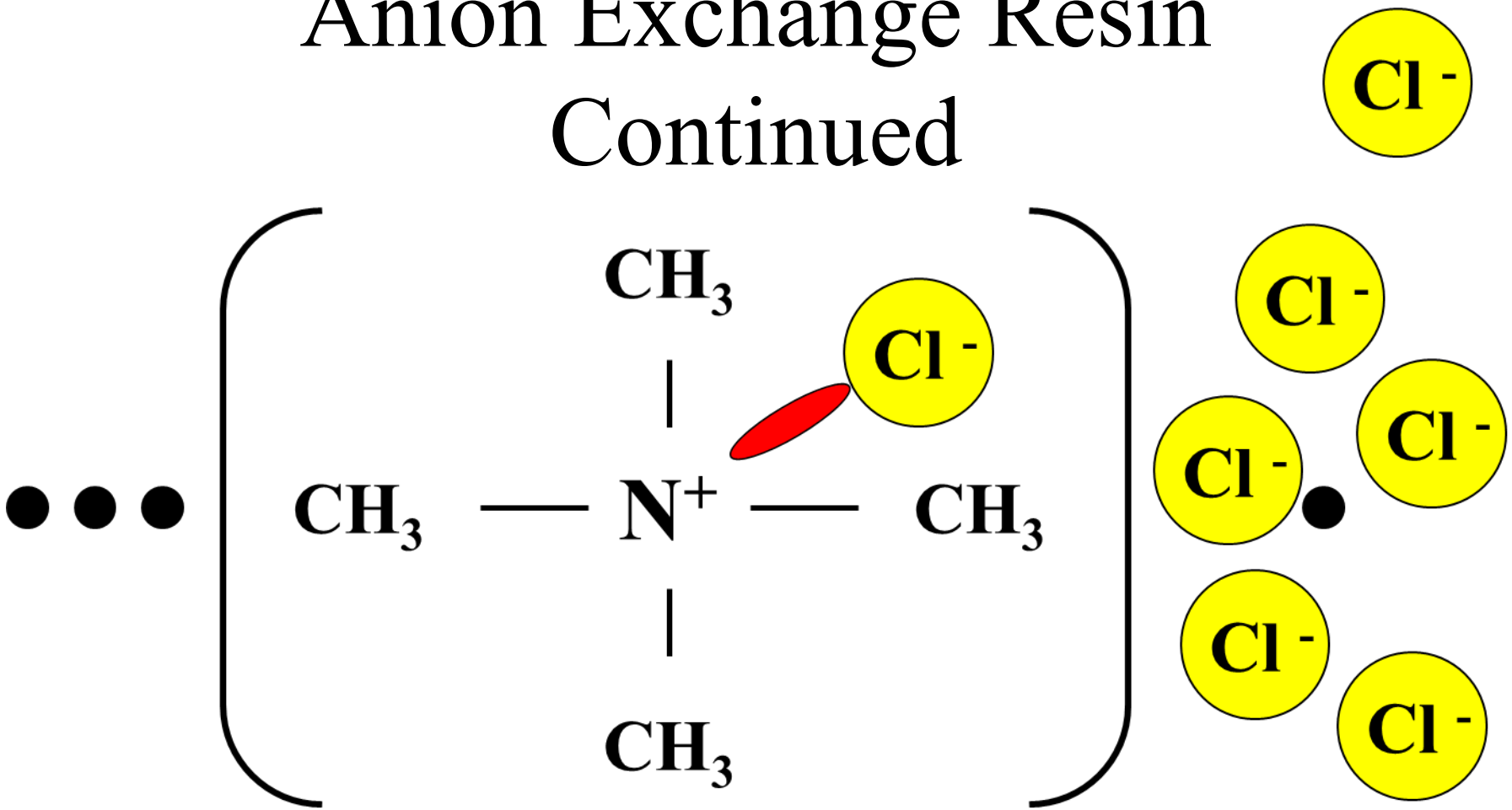




Anion Exchange Resin

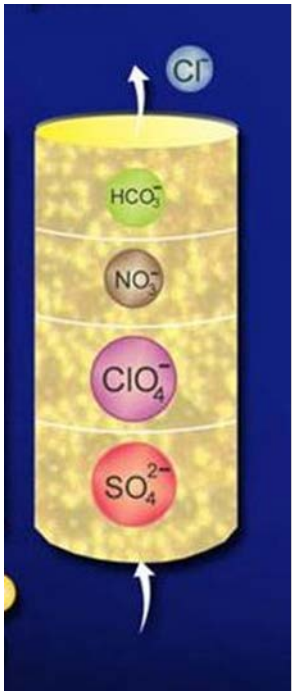


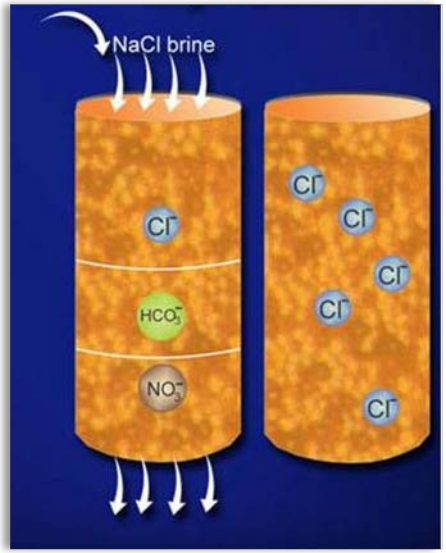
Anion Exchange Resin Continued



Anion Exchange – Process Overview

- Resin Capacity (Bed Volumes)
- Resin Affinity
  (Perchlorate vs. other anions)
- Disposal vs. Regeneration





Effective Anion Exchange Resins

- Perchlorate Selective Resins
- Nitrate Selective Resins
- Strong Base Anion Exchange Resins
- Weak Base Anion Exchange Resins

Perchlorate Selective Resin

Advantages

- Very High Affinity for Perchlorate
  - Limited sensitivity to competing anions
  - can remove perchlorate to below 4 µg/L
- Bed Volumes
  - Ranging from 100,000 to 170,000 Bed Volumes
  - Longer run-times, less residuals generated and lower operating cost than other resin types

Disadvantages

- Resin regeneration is difficult
- Resin is generally disposed
- Disposal
  - Co-contaminants might affect final disposal options
  - Generally disposed at non-hazardous disposal facilities

System Level Costs - Anion Exchange

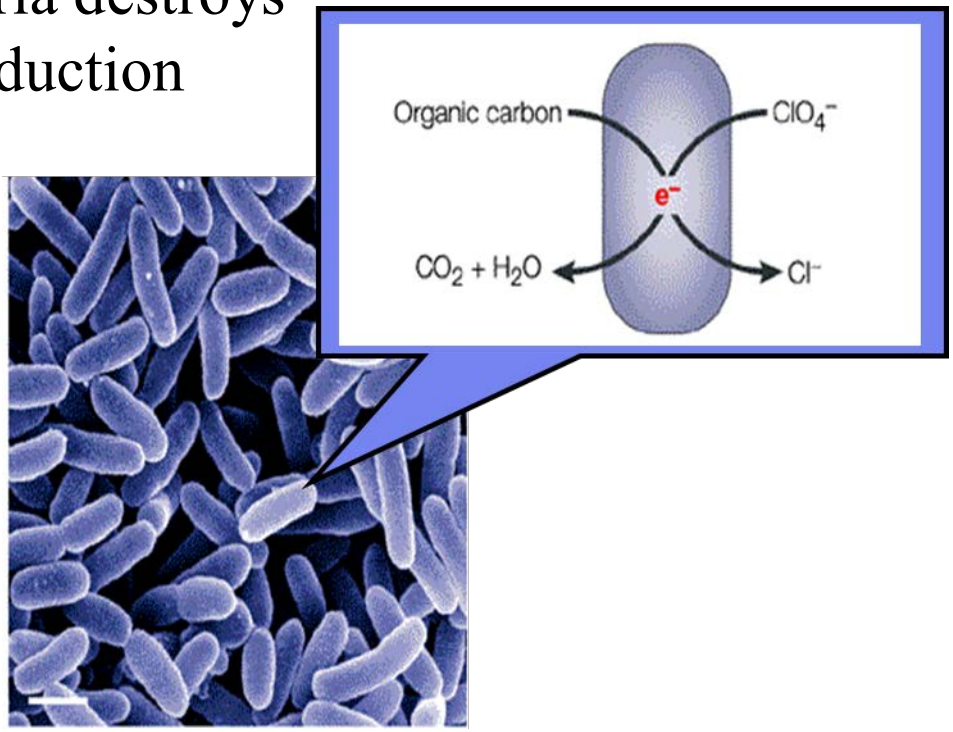
Population Served	Total Capital Costs	Operation and Maintenance Costs
25 – 500	$150,000	$6,000 / yr
501 – 3,300	$400,000	$25,000 / yr
3,301 – 10,000	$1,500,000	$100,000 / yr
10,000 – 50,000	$3,000,000	$300,000 / yr
50,001 – 100,000	$6,500,000	$1,000,000 / yr

* O&M Costs include residuals disposal

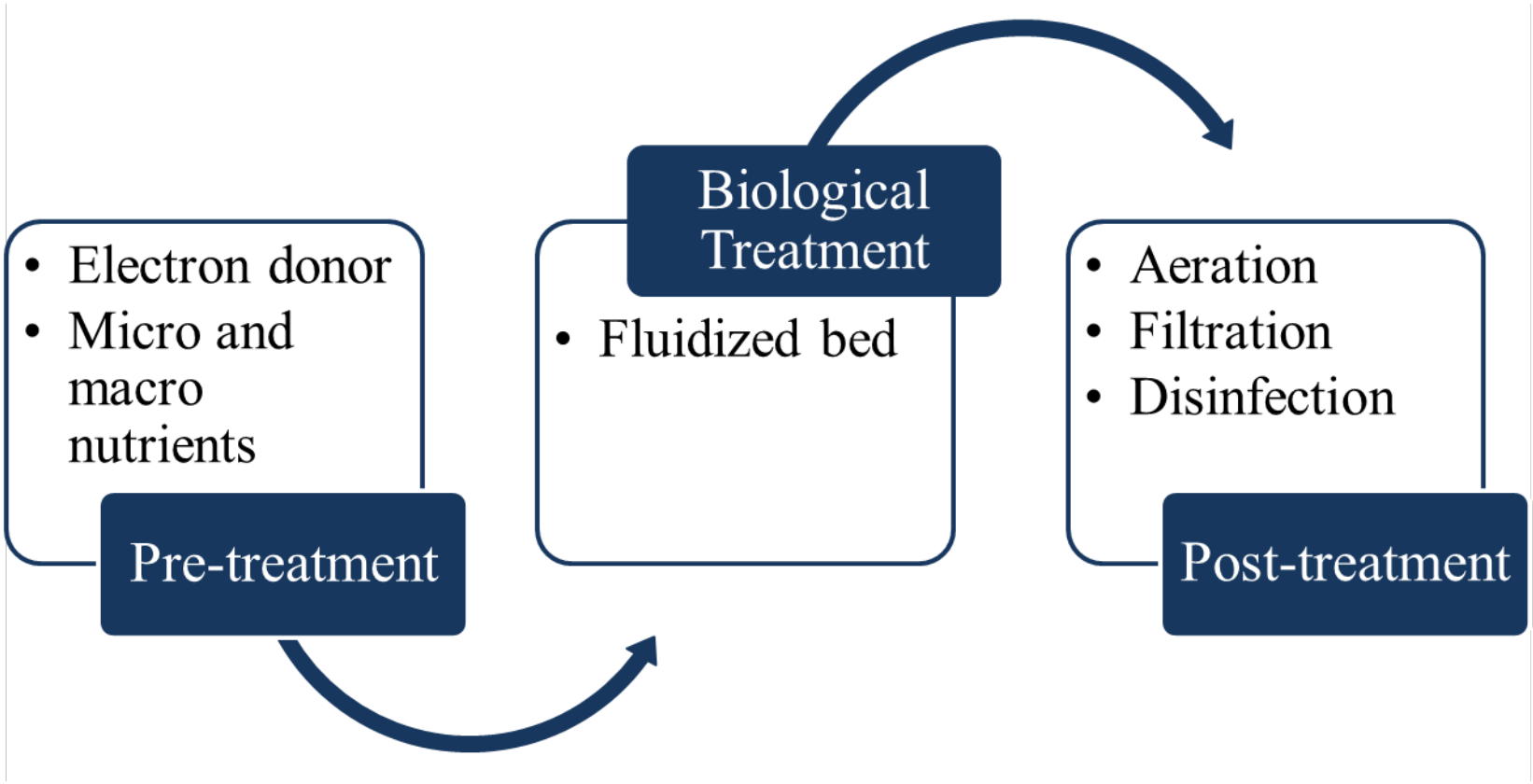
Biological Treatment

- Perchlorate reducing bacteria destroys Perchlorate by chemical reduction

- Effective Process use:
  - Fluidized Bed Reactors



Biological Treatment Steps



Advantages and Disadvantages

- Advantages
  - Bacteria destroys perchlorate
  - Demonstrated to remove perchlorate below 4 µg/L
  - No Perchlorate in waste/residual stream

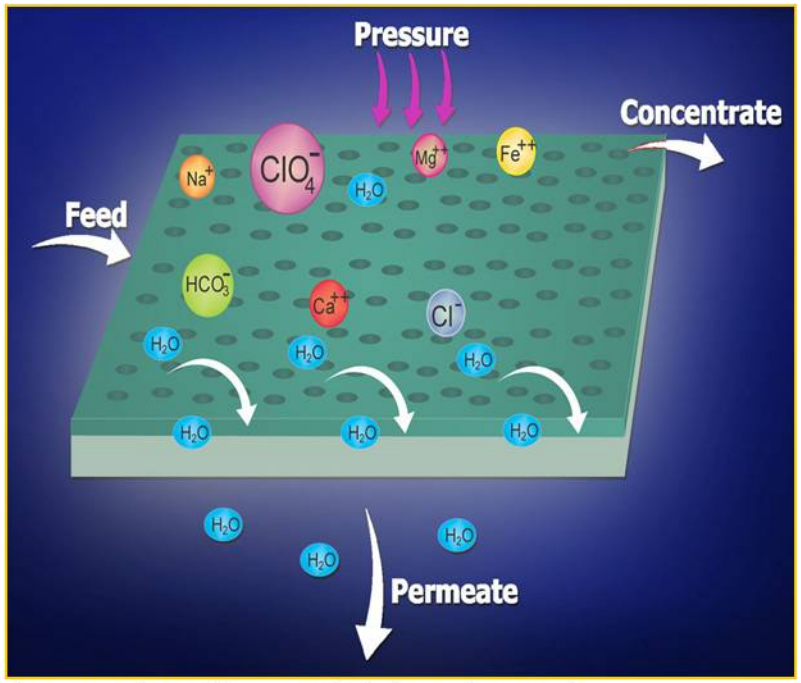
- Disadvantages
  - Requires pre- and post-treatment water adjustments
  - Water temperature must be kept above 10ºC for biomass growth
  - Operational complexities
  - State implementation requirements and public perception might be impediments

System Level Costs – Biological Treatment

Population Served	Total Capital Costs	Operation and Maintenance Costs
25 – 500	$1,000,000	$40,000 / yr
501 – 3,300	$2,000,000	$100,000 / yr
3,301 – 10,000	$5,000,000	$300,000 / yr
10,000 – 50,000	$9,500,000	$750,000 / yr
50,001 – 100,000	$18,000,000	$1,500,000 / yr

* O&M Costs include residuals disposal

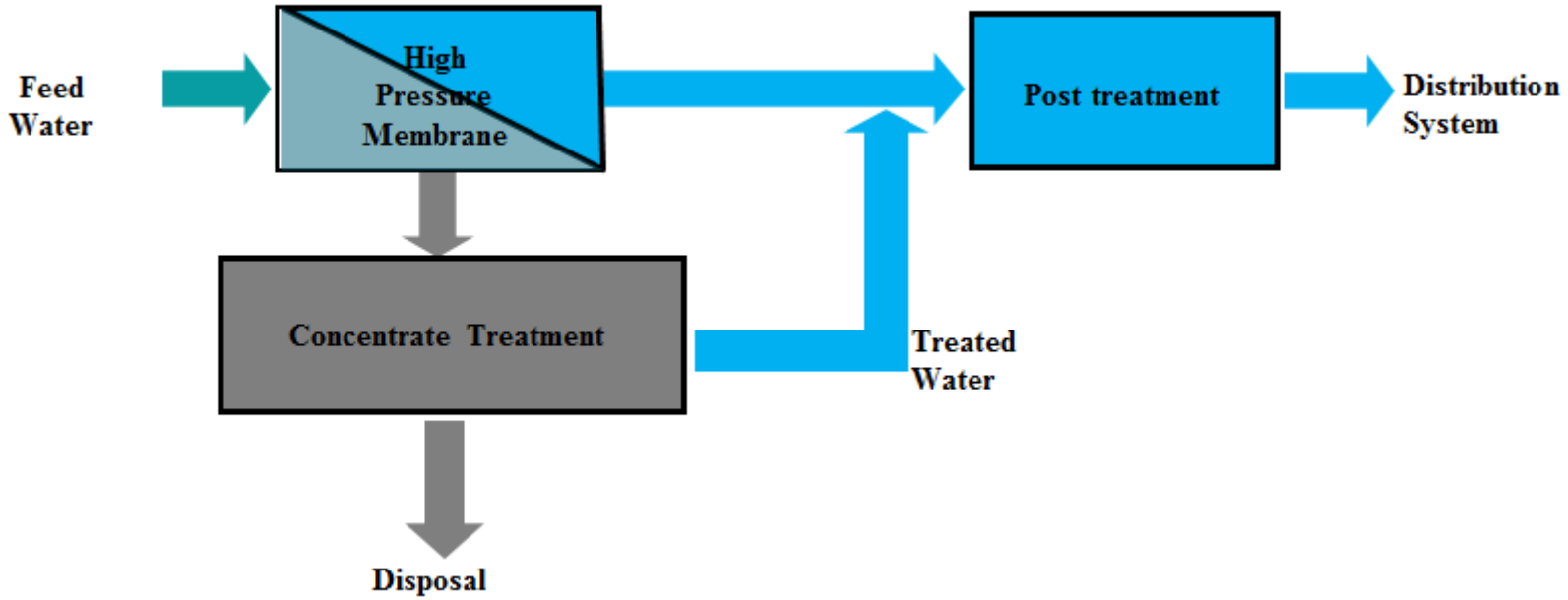
Reverse Osmosis – Membrane Filtration



(Figure Adapted from Gabelich et al., 2001)

- Semi-permeable membrane removes Perchlorate
- Water passes through the membrane
- Dissolved and suspended solids are rejected by membrane (steric exclusion)

Typical Reverse Osmosis Process



Advantages and Disadvantages for Reverse Osmosis

- Advantages
  - >90% perchlorate removal
  - Removes most co-contaminants
  - Well known / Proven technology

- Disadvantages
  - High capital and operating costs
  - Large residual stream (up to 30% of raw water)
  - Less practicable for systems facing water scarcity/shortages

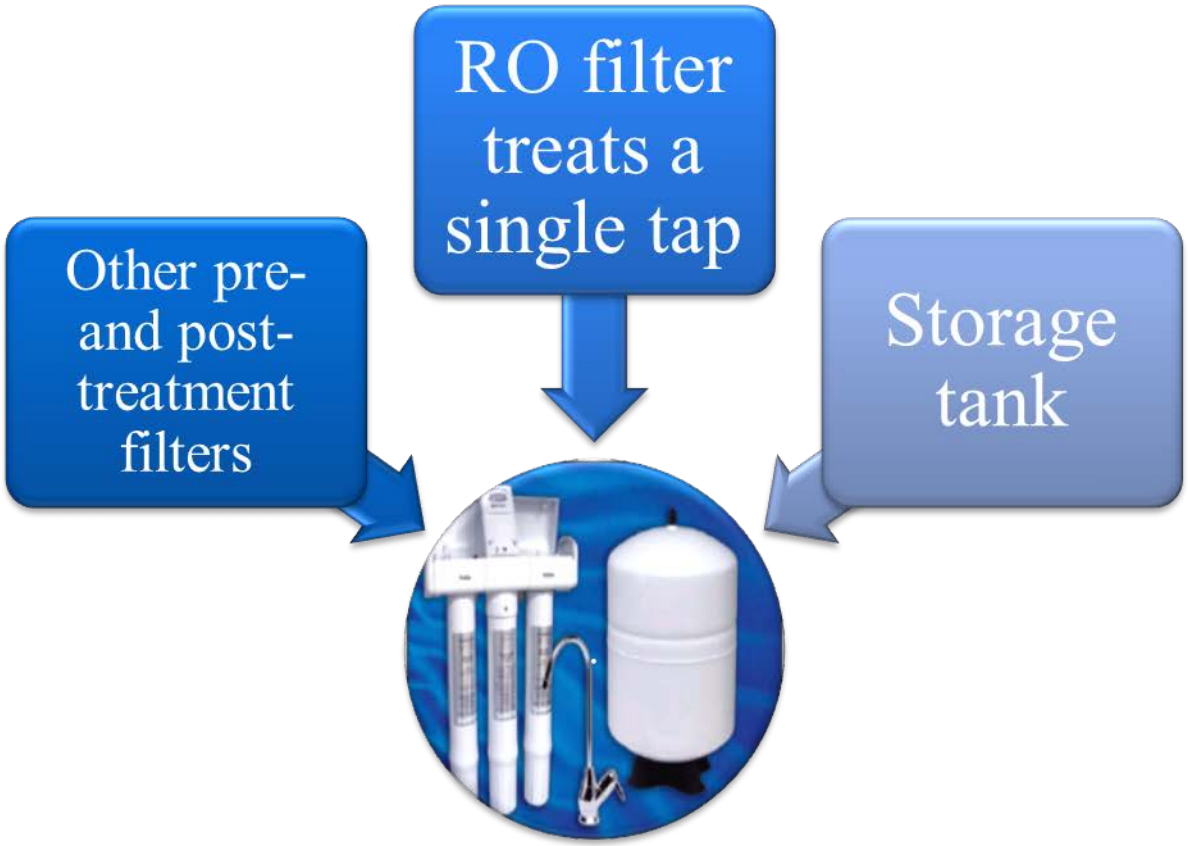
Reverse Osmosis
Residuals Disposal Options

POTW

Deep well injection

Biological treatment

Point-of-Use Reverse Osmosis



Advantages and Disadvantages for POU

- Advantages
  - Economical option for small systems
  - >90% perchlorate removal
  - Removes most co-contaminants
  - Residual discharges to sewer, septic system
  - Treats small portion of household consumption (at tap)
- Disadvantages
  - Not all states allow POU devices
  - System must be owned, controlled, and maintained by the water system or by a person under contract with the water system
  - Customer participation

System Level Costs – Reverse Osmosis POU

Population Served	Total Capital Costs	Operation and Maintenance Costs
25 – 100	$10,000	$5,000 / yr
101 – 500	$60,000	$15,000 / yr
501 – 1,000	$140,000	$45,000 / yr
1,001 – 3,300	$350,000	$100,000 / yr

Modified Granular Activated Carbon (GAC)

- Performance Review:
  - Most of bench and piloting work prior to 2006
  - No performance data on a full-scale demonstration
  - Not aware of peer reviewed information that would enable listing as a BAT or SSCT

Stakeholder Perspectives on Technology & Cost Issues

- Recommendations for Implementation & Analytical Methods:
  - Method 314.0 and 314.1 remain useful for screening purposes; however, recommend confirming all detections with either Method 331.0 or 332.0
- Treatment and Source Reduction Recommendations:
  - Concerns over low MCL because of the potential for production of perchlorate due to the use of sodium hypochlorite in treatment processes
  - Existing treatment plant performance at low levels are not well documented and may not support a low level MCL for perchlorate
  - Working with local agencies (i.e., fire departments for permitting blasting and firework displays) and PWSs (with regard to treatment chemicals) on Best Management Practices (BMPs) may help reduce some sources of perchlorate in drinking water

Summary

- EPA is seeking recommendations from SAB on how to consider available scientific data on perchlorate health effects
- EPA has identified 5 analytical methods for measuring perchlorate in drinking water with MRLs ranging from < 0.1 ug/L to 4 ug/L
- EPA is evaluating technologies for listing as BATs and SSCTs
- EPA is currently considering available data (efficacy and cost) for listing
  - Anion Exchange,
  - Biological Treatment, and
  - Reverse Osmosis (both centralized and POU)

Questions for the NDWAC

- What thoughts does NDWAC have on the availability of analytical methods to measure perchlorate?
- What thoughts does NDWAC have on available treatment technologies for the removal of perchlorate from drinking water?
- How should EPA promote water systems working with local authorities to reduce perchlorate in source waters?

October 4 - 5, 2012

COMMENTS TO THE EPA NATIONAL DRINKING WATER ADVISORY COUNCIL

KIMBERLY WISE, PH.D.
American Chemistry Council

BACKGROUND

- **On February 11, 2011 EPA published a positive determination to regulate perchlorate under the Safe Drinking Water Act (SDWA). A positive regulatory determination can be made if a substance:**
- may have an adverse effect on the health of persons;
- is known to occur or there is a substantial likelihood that it will occur in public water systems with a frequency and at levels of public health concern;
- and presents a meaningful opportunity for health risk reduction for persons served by public water systems.

EVALUATE AND ENGAGE

- **EPA is evaluating the:**
- health effects of perchlorate
- feasibility of treatment
- affordability of treatment for small systems, the costs and the benefits
- implementation of a perchlorate standard

- **EPA is seeking input from:**
- Science Advisory Board
- National Drinking Water Advisory Council
- Department of Health and Human Services
- State and Tribal drinking water programs
- Regulated community (public water systems)
- Public health organizations, academia, environmental and public interest groups, and other interested stakeholders

PROCESS

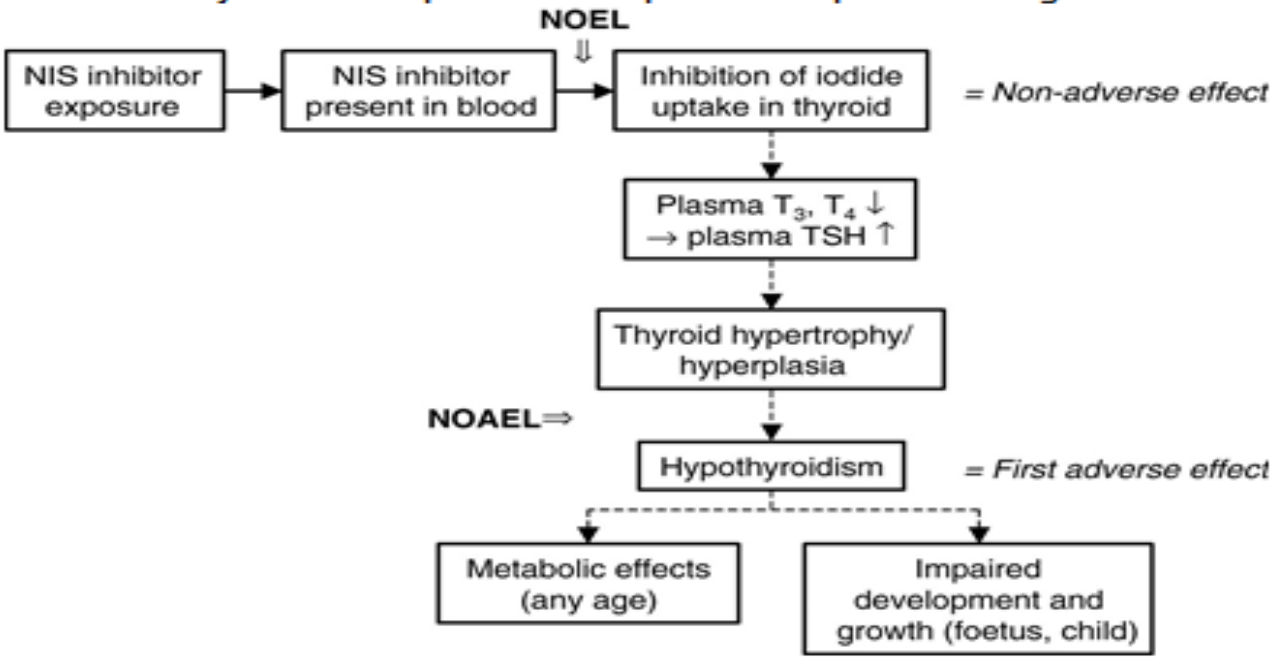
- Final Regulatory Determination – February 11, 2011
- Public Meeting on Environmental Justice Considerations – March 3, 2011
- Science Advisory Board Perchlorate Advisory Panel
- Meeting – July 18 -19, 2012
- Draft Report – September 5, 2012
- Conference Call - September 25, 2012
- Public Stakeholder Meeting – September 20,2012
- National Drinking Water Advisory Council Meeting – October 4-5, 2012
- Meeting of the Small Business Regulatory Enforcement Fairness Act (SBREFA) Panel – TBD
- Availability of the Health Risk Reduction Cost Analysis - TBD
- Availability of Proposed National Primary Drinking Water Regulation for public comment by February 11, 2013

THE SCIENCE

- Epidemiology data are insufficient for causal association between perchlorate exposure and thyroid dysfunction
- Adverse neurodevelopmental effects from perchlorate exposure have not been reported
- Iodide uptake inhibition (IUI) is a potential effect from perchlorate exposure
- IUI is not an adverse health effect
- IUI is a key event that precedes all thyroid-mediated effects; changes in thyroid hormone levels are not necessarily adverse
- Iodide uptake fluctuates every day as a result of diet and other factors
- The body's natural adaptive processes compensate for these fluctuations

REGULATING BASED ON NO EFFECT LEVEL

Figure 1 Model for the mode-of-action of NIS inhibitor toxicity in humans, based on the model of the Committee to Assess the Health Implications of Perchlorate Ingestion, which prepared the January 2005 NAS report 'Health implications of perchlorate ingestion'.



De Groef B et al. Eur J Endocrinol 2006;155:17-25

SUMMARY ON COMMENTS

- Review and evaluate the underlying science for the regulation
- Confirm a meaningful opportunity to provide public health benefit
- Implement best practices from regulatory agencies and public water systems that have implemented similar standards for perchlorate
- Ensure robust and coordinated engagement with stakeholders throughout the process

PSG Perchlorate Presentation to the National Drinking Water Advisory Council

Jonathan Gledhill
Policy Navigation Group

Perchlorate Study Group

- The PSG is comprised of perchlorate users & manufacturers who have worked cooperatively with EPA and states on ensuring the best available science involving perchlorate and include:
  - Aerojet
  - Alliant Techsystems (ATK)
  - American Pacific Corporation (AMPAC)
  - Lockheed Martin

NDWAC Recommendations

- To allow meaningful public comment, the NDWAC should recommend that EPA, prior to issuing a proposed rule:
  - Carry out all of the SAB's recommendations
  - Conduct a comprehensive benefit-cost analysis that incorporates the key findings of the NAS and the SAB.

SDWA Requirements for Setting an MCL

- SDWA requires EPA to do the following in setting an MCL:
  - Use the best available science
  - Make a determination that the benefits of regulation justify the costs in setting an MCL.

The PBPK Model is the Best Available Science if Used Appropriately

- The NAS perchlorate panel concluded the PBPK modeling is "the best available approach" in determining health equivalent exposures (NAS, 2005).
- SAB perchlorate panel's draft report strongly urges use of PBPK modeling as "a more facile, transparent, and rigorous way to address differences in biology and exposure between adults and sensitive life stages than is possible with the traditional approach for deriving an MCLG."
- EPA policy has been to use PBPK modeling for determining human equivalent exposures (HEEs) and adjusting default uncertainty factors.

The PBPK Model is the Best Available Science if Used Appropriately

- Using PBPK model would depart from past EPA practice.
- Important step to carry out recent National Academy Science studies on EPA's use of science and exposure modeling.
- Important that EPA receive NDWAC endorsement to embark on this change.

The PBPK Model is the Best Available Science if Used Appropriately Continued

- PBPK modeling would useful for filling scientific gaps in human health data for sensitive populations and reducing uncertainty for purposes of deriving an MCLG.

Do the Benefits of the Regulatory Level Justify the Costs?

- The SDWA requires EPA to determine whether the benefits of the regulation justify the costs.
- The SDWA lays out a multi-pronged analysis for making this determination based upon the benefits of health risk reduction and costs of compliance.
- The NDWAC can recommend EPA conduct a comprehensive analysis to inform the public.

Do the Benefits of the Regulatory Level Justify the Costs?

- Key issues:
  - What is the benefit the public will receive?
    - What is the adverse effect?
      - NOEL vs. NOAEL

- The SAB perchlorate panel noted EPA's failure to adequately define the adverse effect for purposes of determining the MCLG.

Do the Benefits of the Regulatory Level Justify the Costs? (2)

- Who will gain the benefit?
  - Several Issues
    - EPA's occurrence data is both outdated and flawed.
      - Over a decade old
    - The overwhelming majority of detections have occurred at low levels well below the current drinking water health advisory.
      - The occurrence data shows that few would actually benefit from a national regulation.

- At a minimum, EPA should properly account for current perchlorate occurrence and state standards in its population estimate.

Do the Benefits of the Regulatory Level Justify the Costs? (3)

- How much benefit does regulating perchlorate in drinking water does the population receive?
  - Perchlorate in drinking water is a very small fraction of total goitrogen exposure in drinking water and diet.

- EPA's Inspector General report describes this issue.

Conclusion

- The PSG urges the NDWAC panel should recommend that EPA:
  - Carry out all of the SAB's recommendations.
  - Conduct a comprehensive benefit-cost analysis that incorporates the key findings of the NAS and the SAB
    - The occurrence data is insufficient to support determining an appropriate MCL and HRRCA analysis.
    - Define the adverse effect before developing the MCL/MCLG.
    - Review the impact of other goitrogens as part of benefit-cost analysis.

Small Drinking Water Systems and Building Partnerships

Small Systems in Region 5

- Number of Public Water Systems = **45,803**

- Number of Non-Community Water Systems = **38,465**

  84% of the PWSs in R5

  37% of the nation's NCWSs

- Number of Community Water Systems with populations 500 or less = **3,936**

Problems at Small Systems

- Monitoring/Reporting Violations
  - Non-Community Water Systems = **6,951**
  - Community Water Systems (pop $\leq$ 500) = **841**

- Health-Based Violations
  - Non-Community Water Systems =
  - Community Water Systems (pop $\leq$ 500) =

Issues at Small Systems

- **<u>Lack of Technical Capacity</u>**
  - Operating a PWS is not the primary business for most Transient NCWSs
    - School/Daycare
    - Restaurant
    - Service Station
    - Recreation area
    - Hotel/Motel

Issues at Small Systems (2)

- **Technical Issues Even at Small CWS & Non-Transient NCWSs**
  - Region 5 experience during early implementation of Stage 2 DBP Rule
    - Number of operators lacked knowledge of the DW rules
    - Some operators lacked knowledge of proper O&M

Issues at Small Systems (3)

- **<u>Lack of Managerial Capacity</u>**
  - In Region 5's experience, there have been issues with:
    - Lack of short and long term planning
    - Little staff training
    - Poor financial/management systems

Issues at Small Systems (4)

- **<u>Lack of Financial Capacity</u>**
  - Many small water systems are not collecting and/or setting aside sufficient funds for:
    - Proper O & M
    - Replacement of equipment
    - Funding necessary construction
      - New treatment
      - New well

Region 5 Small Systems Initiative

- Started in 2011
- **Purpose:** Preventing non-compliance and improving compliance at Public Water Systems that are schools or childcare facilities
- Schools/Childcare Facilities
  - 2,379 systems
  - 1,452 with violations (2006-2010)
  - 376 violations not returned to compliance
  - 75% Monitoring/Reporting violations
  - 25% Health-based violations

Region 5 Efforts with Small Systems

- Tailored Region 5 activities to State's needs
- Identified menu of 10 activities
  - Technical assistance
  - Help with Ground Water Rule
  - Coordinate with National Rural Water Association
  - Provide system reminders
  - Help with Lead
  - Notification of School Boards
  - Coordination with Region 5 Childrens' Health
  - Research innovative funding
  - Track & provide status reports to States on R5 actions
  - State-generated suggestions

Region 5 Efforts with Small Systems (2)

- Sent letters to schools/childcares with repeat Monitoring/Reporting violations stressing importance of sampling.
  - Number of systems responded to letter from "USEPA"

- Sent letters to schools/childcares with violations of the Lead Consumer Notice requirement.
  - Number of systems are responding.

Region 5 Efforts with Small Systems (3)

- Sent letters on the requirement to have certified operators.
- Working with State on providing training to local health department on rule requirements.
- Writing newsletter articles focused on rule requirements for small systems – acute contaminants

Region 5 Efforts with Small Systems (4)

- **<u>Region 5 Enforcement</u>**

  7 small CWSs with radium or arsenic MCL violations
  - Out of compliance for number of years
  - Lack of funding
  - Lack of urgency

Region 5 Efforts with Small Systems (5)

- **<u>Region 5 Enforcement</u>**
- Region 5 sent clear message that waiting was not an option.
  - Required systems to come up with plan and funding

- Region 5 got consumers involved by holding public meetings and providing health information.

Region 5 Efforts with Small Systems (6)

U.S. ENVIRONMENTAL PROTECTION AGENCY

Region 5 Water Share

Serving Illinois, Indiana, Michigan, Minnesota, Ohio, Wisconsin and 35 Tribes

Contact Us **Search:** All EPA This Area Go

You are here: EPA Home » About Region 5 » Water » Ground Water & Drinking Water » Drinking Water in the Village of Ransom, Illinois

Region 5 Water Home

- Basic Information
- Enforcement & Compliance Assurance
- Grants & Funding
- Ground Water & Drinking Water
- Permits
- Underground Injection Control
- Water Quality
- Watersheds & Wetlands

Drinking Water in the Village of Ransom, Illinois

Contact Information
Annie Hawkins
(IL_Drinking_Water@epa.gov)
312- 353-8807

Important Health Message

For many years, the drinking water in Ransom, IL has contained more radium than the federal government allows. EPA is concerned because long-term exposure increases the risk of developing certain health problems. The Village of Ransom must find a permanent way to reduce radium levels in the water supply.

In the meantime, residents may choose to take precautionary steps to reduce your radium exposure. This is a personal decision based on cost, convenience and one's view of risk.

How radium can affect your health

Over-exposure to radium increases the risks of developing certain cancers, particularly bone cancer. Over time, radium can damage bones, tissue or genetic material.

Children are at a greater risk

Drinking water containing radium at high levels for a long period of time increases the risk of cancer, particularly bone cancer. The body recognizes radium as calcium and deposits significant amounts to bones after repeated ingestion. Since children are still growing, they are at a higher risk of absorbing larger amounts of radium in their bones, especially if exposure occurs during a critical growth stage.

Discussion

- Funding is a major issue for small systems with MCL violations. Are there innovative approaches/vehicles to provide funding besides the traditional DWSRF, USDA-Rural Development funds?

- What innovative approaches can be used to provide needed technical and managerial assistance?

Thank You

for this opportunity to speak

to you about small water systems

EPA Office of Water: Source Water Protection Initiative

Elizabeth Corr, Associate Director

Drinking Water Protection Division

Office of Ground Water and Drinking Water

Yu-Ting Guilaran, Associate Director

Assessment and Watershed Protection Div.

Office of Wetlands Oceans and Watersheds

United States Environmental Protection Agency

Presentation to the Nation Drinking Water Advisory Council

October 4, 2012

Session Purpose & Overview:

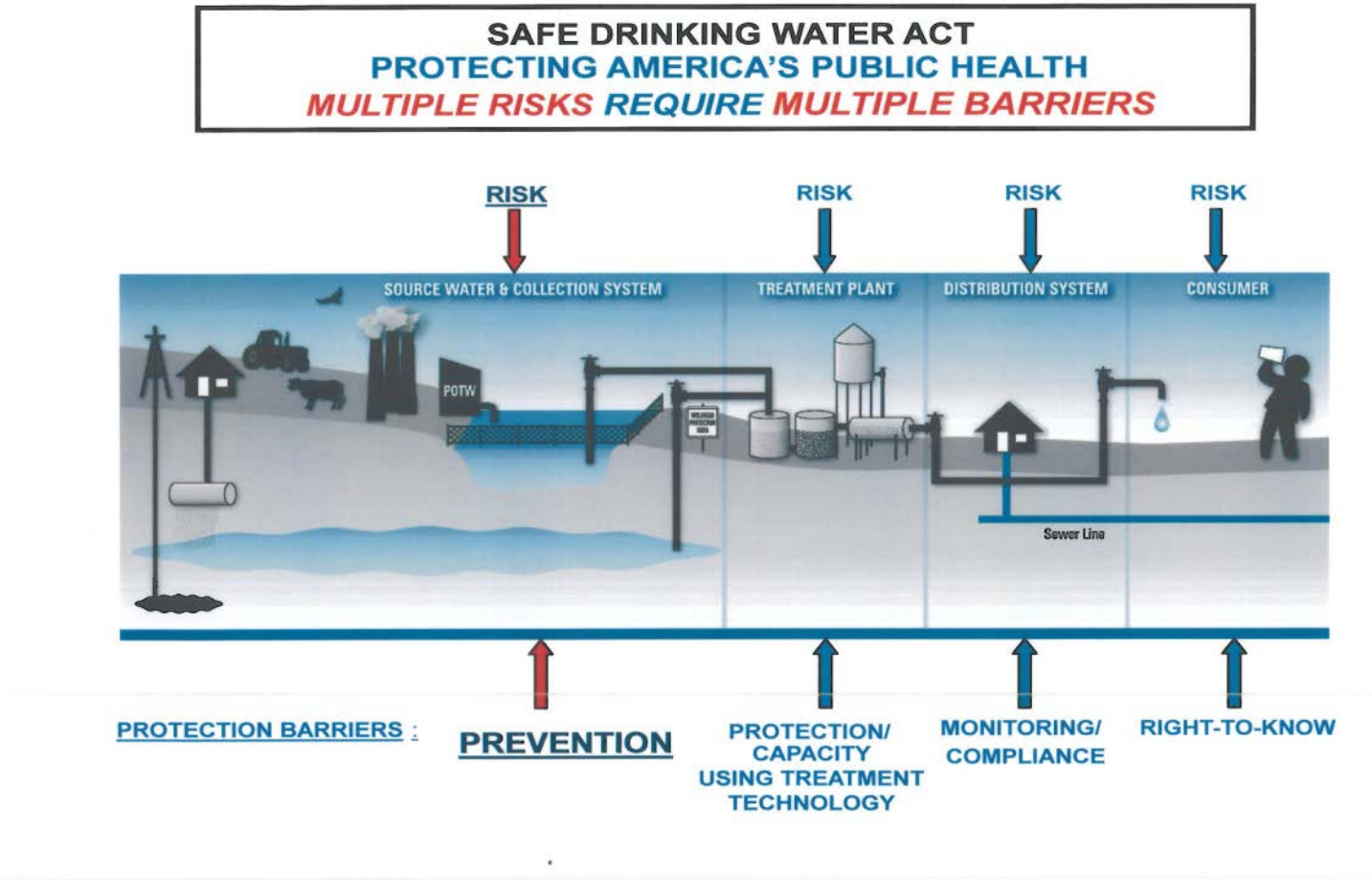
- **Renewed & new energy & interest across EPA's Office of Water (OW)**
  - **OW's SDWA & CWA leaders are engaged**
  - **We have reached out to our state partners**

- **Seeking your thoughts from a national perspective on 3 key questions:**
  - **Defining goals & objectives**
  - **Deciding where to start**
  - **Reaching out to the public**

- **Today's session:**
  - **OW provides background to frame our questions**
  - **Council discussion**

What is Source Water?

- **Surface water & ground water**
- **Current & potential drinking water sources**
- **Geographically defined, e.g.,**
  - **Upstream of drinking water intakes**
  - **Wellhead recharge areas**


SAFE DRINKING WATER ACT
PROTECTING AMERICA'S PUBLIC HEALTH
MULTIPLE RISKS REQUIRE MULTIPLE BARRIERS
RISK
RISK
RISK
RISK
SOURCE WATER & COLLECTION SYSTEM
TREATMENT PLANT
DISTRIBUTION SYSTEM
CONSUMER
POTW
Sewer Line
PROTECTION BARRIERS :
PREVENTION
PROTECTION/ CAPACITY USING TREATMENT TECHNOLOGY
MONITORING/ COMPLIANCE
RIGHT-TO-KNOW

Why Protect Source Waters?

- **Reduce / prevent contaminants in drinking water**
  - **Better / more reliable public health protection**
  - **May lower treatment costs**
- **Difficult / costly to develop a new water source**
- **New / emerging drinking water contaminants**
- **Responding to increased consumer awareness / concern**

Protect Source Waters from What?

- **Contaminants from anthropogenic sources**
  - **Nutrients / pathogens / toxic chemicals**
- **Many potential sources of contamination**
  - **Agricultural / commercial / industrial / residential**
- **Local / state / regional concerns & priorities vary**
- **Source water conditions may vary / change over time**

Potential Universe of Source Water Protection

- **Maintenance & restoration of source water quality**
- **Ground water & surface water**
- **Actual & potential contamination sources**
- **Regulated & emerging contaminants**
- **Public water systems of all sizes & private wells**
- **Near & long term commitment & actions**
- **Voluntary & regulatory tools & approaches under multiple programs & statutes**

SDWA Framework for Voluntary Action:

- Making information available through state source water assessments to inform local decision-making

- Source Water Collaborative
  - Geographic focus, e.g., Salmon Falls Watershed Collaboration
  - Strengthening national partnerships, e.g., with USDA

- Reaching out to new audiences
  - FFA–sponsored source water curriculum for high school agricultural science students

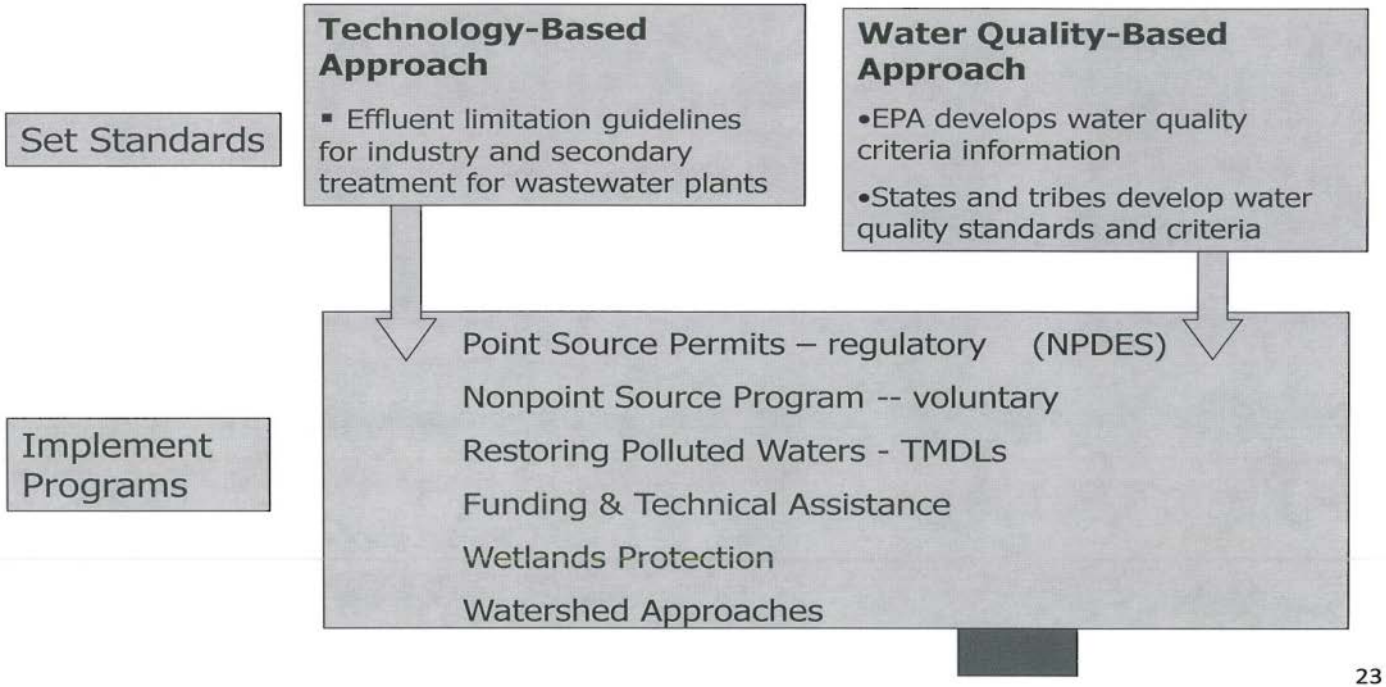
- Funding
  - States may use the Drinking Water State Revolving Fund 15% set-aside for source water protection activities (consistent with a state's Capacity Development Strategy) which could support Clean Water Act objectives (e.g., impaired waters restoration) where there is a drinking water nexus

Clean Water Act Goals & Policies

"…to restore and maintain
the chemical, physical, and biological integrity
of the Nation's waters."

- **Clean Water Act programs can be implemented to protect source waters**

Clean Water Act Framework



COUNCIL DISCUSSION TOPICS

1) **What should our goals & objectives be?**
2) **Are there actions, approaches or problems that we should focus on first?**
3) **How can we engage stakeholders & citizens in protecting their source waters? What are the tools that we should consider to reach people?**

Consumer Confidence Report (CCR) Rule Retrospective Review: Electronic Delivery

Presentation Overview

- Consumer Confidence Report (CCR) Rule Overview
- CCR Rule Retrospective Review
- Draft CCR Electronic Delivery Options and Considerations Document
- Feedback from Public Meeting
- Next Steps for Review
- NDWAC Discussion

Consumer Confidence Reports

- **CCR Goal:** The CCR provides consumers with local water quality information that allows for informed public health choices and increases dialogue between community water systems and their customers.
  - Annual report mailed or directly delivered to each customer of community water systems beginning in 1999.
  - Key information required:
    - System information and source of water
    - Detected contaminants
    - Compliance with regulations
    - Specific educational material
  - Certification to primacy agency

CCR RULE RETROSPECTIVE REVIEW

CCR Rule Retrospective Review

- October 2011 - Initiated Retrospective Review.
- February 2012 - Online listening session.
  - Gathered feedback on 5 areas – CCR Understandability, CCR certification, Use of Tier 3 PN requirements, CCR units for reporting detected contaminants and CCR electronic delivery.
- Evaluated listening session feedback and other information gathered.
- September 2012 - Released draft electronic delivery document for public comment.
- October 1, 2012 - Public listening session.
- Complete review by end of 2012.

Focus on Electronic Delivery

- Stakeholders requested that EPA evaluate electronic delivery of CCRs, in addition to several other aspects of the CCR rule.
- EPA examined how similar industries adapted the delivery information to electronic methods.
- Based on research, EPA identified:
  - 5 methods of electronic delivery
  - 2 implementation approaches
- EPA also identified delivery methods that are not consistent with the existing regulation

Information Evaluated

Independent Surveys and Pilot Studies

- American Water Works Association (AWWA) Consumer Survey (2011)
- AWWA Cost Savings Utility Survey (2012)
- 2012 Minnesota CCR Pilot Study
- Community Water System Electronic Delivery Pilot Tests

EPA Analysis

- Market Research Report
- Cost Savings Estimate Data:
  - AWWA utility and customer surveys
  - Minnesota customer survey
  - Information Collection Request

DRAFT CCR ELECTRONIC DELIVERY OPTIONS AND CONSIDERATIONS DOCUMENT

Electronic Delivery

- The CCR rule states that a community water system must "mail or otherwise directly deliver" a copy of the CCR to each customer by July 1, annually.

- EPA interprets the existing rule language "mail or otherwise directly deliver" to allow any form of delivery of the CCR, including electronic, so long as the system is providing the report directly to each customer.

- Product of retrospective review: EPA interpretive memo with attachment providing details and considerations.

Draft CCR Electronic Delivery Options and Considerations Document

- Describes the electronic delivery methods and approaches.
- Electronic delivery program considerations.
- Limitations and advantages matrix of the methods.
- Additional aspects of CCR rule requirements.

Electronic Delivery Methods and Approaches

2 Implementation Approaches

1. Paper CCR Delivery with Electronic CCR Delivery Option

2. Electronic Delivery with Paper CCR Delivery Option

5 Electronic Delivery Methods

1. CCR is embedded in the email message
2. Email the CCR as a file attachment
3. Email direct URL to CCR
4. Mail direct URL to CCR
5. Additional electronic delivery that satisfies "otherwise directly deliver"

Electronic Delivery
"Directly Deliver" Requirement

- EPA interprets the existing rule language so that two elements must be met for electronic delivery to comply with the requirement to "directly deliver":
  - The community water system must provide a direct URL to the CCR or provide the CCR by email.
  - If a community water system is aware of a customer's inability to receive a CCR electronically, it must continue providing a paper CCR (or follow requirements for distribution by other means if the system has a small system mailing waiver.)

Draft Electronic Delivery Methods

1. CCR is embedded in the email message
2. Email the CCR as a file attachment
3. Email direct URL to CCR
4. Mail direct URL to CCR
5. Additional electronic delivery that satisfies "otherwise directly deliver" (to account for future technologies)

Potential Limitations Using Email

- Obtaining and maintaining accurate email addresses.
- Technology costs - software, bandwidth, etc.
- Technology hurdles - software compatibility, spam filters, firewalls or file size limitations.
- Customer reluctance with unfamiliar email or attachments.

CCR Delivery Methods Not Allowed

- EPA also identified current electronic delivery methods that do not meet existing CCR Rule requirements.
  - Providing customers with an indirect URL to their CCR which would require the customer to search on a website and possibly not find the CCR is not "directly delivering" the CCR.
  - Solely using social media (e.g., Twitter or Facebook) for bill-paying customers does not meet the requirement to "directly deliver" since these are membership Internet outlets and would require a customer to join the website to read their CCR.

CCR Delivery Approaches for Bill-Paying Customers

Paper CCR Delivery with Electronic CCR Delivery Option	Electronic Delivery with Paper CCR Delivery Option
CWS informs customers of the electronic delivery option and registers customers who identify electronic delivery preference. If customer does not identify electronic delivery preference, CWS delivers paper CCR.	CWS delivers CCR electronically, with an option to request paper CCR delivery.

Electronic Delivery Considerations and Suggestions

- Conduct public outreach to inform customers of the upcoming change in delivery method and opportunity to contact the community water system with any concerns.
- Display the direct URL to the CCR on every mailing (e.g., quarterly water bill.)
- Send a dedicated email (with a CCR-related subject line) informing customers of the availability of the CCR each year.
- Manage email databases regularly to ensure correct emails are being used for electronic delivery to customers.
- A community water system may want to consider keeping a record of each customer's delivery preference for future CCR deliveries.

Additional Aspects of CCR Rule Requirements

- "Good faith" effort for non-bill paying consumers (e.g., apartment tenants)
  - Recommend practices to reach non-bill paying customers electronically such as social media.
- Multilingual requirement
  - Community water systems may want to put email notices in the languages required by the primacy agency for this section of the CCR Rule.
- Small system delivery waivers
  - Electronic delivery does not replace delivery waivers but is an option for small systems.
- Delivery certification requirement
  - Primacy agencies may want to add an option for electronic delivery to their certification form.

Key Points From Review

- In order to meet the SDWA and CCR Rule requirement to directly deliver a CCR to every customer a community water system may need to use a combination of paper and electronic delivery.
- There is not one solution that will fit every customer and every community water system.
- Community water systems may want to take the time to discover what customers prefer before implementing a change.
- Projected cost savings may not be immediate.
- All customers may not be ready for electronic delivery.

FEEDBACK FROM OCTOBER 1 PUBLIC MEETING

Next Steps

- Public comments through October 11, 2012.
- End of year release:
  - EPA CCR Interpretive Memo
  - CCR Electronic Delivery Options and Considerations (memo attachment)
  - Summary Issues Document
- Planning for outreach activities in 2013.

Discussion Questions

- General reactions to EPA's proposed methods for electronic delivery?
- Are there other forms of electronic delivery of CCRs that EPA should consider?
- What recommendations can EPA provide to community water systems on how best to determine the appropriate approach and methods if a system is considering electronic delivery?

Appendix II: Presentations

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