

**U.S. Environmental Protection Agency**  
**Science Advisory Board**  
Drinking Water Committee (DWC)  
Advisory on Contaminant Candidate List (CCL 3)

**Date and Time:** April 23, 2008 9:00 to 6:00 EDT  
April 24, 2008 8:30 to 12:30 EDT

**Purpose:** To review and provide recommendations for EPA's draft CCL 3 process and final list of contaminants

**Location:** Science Advisory Board Conference Center  
1025 F Street, NW, Suite 3705  
Washington, D.C. 20004

**Committee Members:** Dr. Joan B. Rose, Chair  
Dr. Mark Borchardt  
Dr. John Colford  
Dr. Penelope Fenner-Crisp  
Dr. Jeffrey Griffiths  
Dr. Joseph Landolph  
Dr. Desmond F. Lawler  
Dr. Christine Owen  
Dr. Richard Sakaji  
Dr. Gary Saylor  
Dr. David Sedlak  
Dr. Gina Solomon  
Dr. Laura Steinberg

**Summary of Meeting:**

*Introductions, Review Agenda, and Purpose of Meeting*

After Dr. Resha Putzrath, Designated Federal Officer (DFO), convened the meeting, Dr. Joan Rose, Chair, welcomed the participants and asked the members and the audience to introduce themselves. She reviewed the agenda and the charge questions.

*Presentations by Agency*

Ms. Cynthia Dougherty, Director of the Office of Ground Water and Drinking Water in EPA's Office of Water, presented, "CCL 3: Introduction." She differentiated between the first two iterations of the Contaminant Candidate List (CCL 3) that used best professional judgment and the current exercise. Following the recommendations of the National Academy of Sciences, this third iteration is a data-driven process. The draft CCL 3 list contains contaminants with sufficient information to assess and identify research needs. Dr. Dougherty mentioned that they had solicited public comments and were aware of the recent articles and concern about pharmaceuticals in drinking water.

After the comments from the DWC, they would determine if any additional changes were needed before the final CCL 3 would be released in 2009. In response to questions from the Committee, she clarified the legal requirements of the CCL process.

Mr. Thomas Carpenter, also in EPA's Office of Ground Water and Drinking Water, presented, "CCL 3: A New Process," that walked the DWC through the steps of selecting the CCL 3. Clarifications were requested by the Committee members who had attempted and failed to follow specific chemicals through the process. Others had difficulty understanding why greater scrutiny of published literature, e.g., on pathogens, was not included in the process. Although some of the issues were clarified, others were deferred until the later discussion of the charge questions for the CCL 3.

#### Public Comments

Two people presented comments at the meeting.

Mr. Robert L. Griffin, General Manager of the Little Hocking Water Association, presented information on perfluorooctanoic acid (PFOA) and the reasons that PFOA should be placed on the CCL 3. He presented data from their water supply, both with regard to worker exposures and customers who had been placed on bottled water as a result of the levels of PFOA. He mentioned that EPA and the SAB had found PFOA to be a carcinogen and to cause reproductive effects in animal studies.

Steve Via, Regulatory Affairs Manager for the American Water Works Association (AWWA), supported EPA's use of a science-driven CCL process to identify potential candidates for new drinking water standards. He suggested that a thoughtful, expert-based process should be employed to evaluate the product of the preliminary CCL that results from the scoring algorithms. He also encouraged EPA to develop a holistic drinking water research plan that focuses on contaminants that are likely to be of public health concern.

Charge Question 1: Please comment on whether the Federal Register Notice and support documents are clear, transparent, and adequate to provide an understanding of the overall processes and selection of contaminants for the draft CCL 3.

Dr. Desmond Lawler and Dr. Laura Steinberg were the Lead Discussants for charge question 1. Dr. Lawler used slides to review the process. One member expressed concern that, while models could be an efficient method for sorting through a large universe of chemicals, the reasons for the selection of those particular classifications for the chemical contaminants were not clear in the Federal Register Notice (FRN) that documented the process or the background documents. Thus, even though a training set of chemicals was used to set the parameters, the development of the underlying model was not sufficiently transparent. Moreover, the member was unable to understand how information on the certainty of the data about the chemical was used in the process. Other members agreed, giving examples of their attempts to follow chemicals through the process. Another member mentioned that the major difference with the selection of chemicals for the CCL 3 was using output from the model, then addressing the output

with expert opinion rather than expert opinion alone. For the microbes, a major issue was the lack of use of potency data in conjunction with severity data.

*Pathogens and Toxins: Charge Questions 2 to 4:*

*Please comment on whether the draft CCL 3 list represents those contaminants that have the highest potential to occur in public water systems and cause adverse human health effects.*

*Please provide any data that may suggest that contaminants which are currently on the draft CCL 3 list should not be listed.*

*Please provide any data that may suggest that contaminants which are currently not on the draft CCL 3 list should be listed.*

Dr. Mark Borchardt, Dr. Gary Saylor, Dr. Jeffrey Griffiths, and Dr. John Colford were the Lead Discussants for charge questions 2 through 4 for pathogens and toxins. One member mentioned that the use of internal, i.e., EPA, expert opinion to move pathogens from the PCCL to the CCL diminished the transparency of the process. In particular, it is unlikely that anyone outside the Agency would be able to reproduce the process. Such a process could introduce unknown biases. Several members had problems with the transparency of the scoring system including: the “policy factors,” absence of consideration of potency, normalization of health scores, and population attributable risk. A member noted that endemic waterborne disease rates were not considered, only outbreaks as listed by Center for Disease Control and Prevention (CDC), and that this issue might be why certain pathogens were not on the draft CCL 3. Dr. Griffiths suggested that, at a minimum, this issue should be discussed. Another member was concerned about the use of the 90<sup>th</sup> percentile, especially as the risk was “by state” rather than “by population served.” Similarly, the selection of weighting scores was not believed to be sufficiently clear, nor was the rationale for the cut-off score for listing (as previously mentioned: PCCL to the CCL). It was felt that results from a sensitivity analysis might improve the scoring system.

A member was concerned that the results of the model were not used, but rather altered when the experts within EPA were dissatisfied with the outcome. In particular, this adjustment was not readily apparent in the FRN. After a discussion about the process with EPA, the member noted that the hierarchy or data sources that was used by EPA was missing from the documentation about the process. Several of the Committee members were concerned about the limited data sources used. Data from the literature would enhance the selection, as might data from Europe and Canada. For example, adenoviruses dropped off the list because there was no outbreak in the US, though there have been outbreaks in Europe. It was also believed that the treatability of the pathogens should be considered, as listing a pathogen for which there is no treatment lessens the utility of the CCL. Ability to form biofilms and other aspects that might resist disinfection processes might be useful to consider.

Dr. Rose summarized the discussion, noting that this new selection process is more data driven, resolution of some of the data and quality of some of the data were poor, and that it still depends on expert opinion and could be improved.

*Chemicals Charge Questions 2 to 4 (listed in previous section):*

The chemical contaminants were divided into two groups to facilitate discussion of charge questions 2 through 4. Dr. Joseph Landolph and Dr. David Sedlak were Lead Discussants for one group, while Dr. Penelope Fenner-Crisp and Dr. Gina Solomon were for the other group.

The use of expert judgment to select chemicals for the CCL was not felt to be transparent in the FRN. Processes that were later rejected were explained in more detail than those that were actually used. In particular, it was felt that the current process imposed a complex and burdensome process that ultimately relied heavily on the opinion of EPA's employees. Furthermore, Committee members who had tried to track specific chemicals through the system were not able to do so. Mr. Carpenter provided additional information and said that he could provide the Committee the next day with documents that were publicly available that would assist them with tracking chemicals.

All of the Lead Discussants were surprised by some of the chemicals that made the CCL as compared with some that did not. The reasons varied. For example, one member noted the inclusion of some, but not the expected, isomers of hexachlorocyclohexane, as well as the inclusion of pesticides with short half-lives and those that were no longer in use in the US. It was suggested that, for clarity, the fate of all chemicals on the CCL 2 should be easily discernable in the documentation for the CCL 3.

Several members provided suggestions for improvement. For example, a member mentioned the potential benefits of using computational toxicology information, and of using risk assessment calculations to (a) objectively and quantitatively prioritize toxic and carcinogenic chemicals for the inclusion on the CCL 3 list, and then to (b) further prioritize toxins and carcinogens within the final CCL 3 list for further regulation. This member also mentioned that the current list was too long and that the chemicals on the draft CCL 3 should be prioritized for consideration for regulation. The toxicological and carcinogenic properties of the chemicals were also discussed; a detailed discussion of these chemicals is included in an attachment to the DWC's report. Other suggestions included: more use of data in the published literature and other regulatory data bases; considering classes of chemicals together; differential consideration of elements that are essential nutrients; sensitivity analysis on the scoring and cut-off values; using other metrics to address health concerns, e.g., antibiotics in drinking water may lead to antibiotic resistant pathogens; and consulting with the Committee earlier in the process.

*Day 1 Summary and Action Items*

Dr. Rose indicated that the Committee members should make their recommendations under four categories: (1) clarifications regarding steps in the process that will make it more transparent, (2) suggestions to improve the process for future CCLs, (3)

contaminant-specific recommendations, and (4) the future: emerging issues and data needs. The meeting was adjourned by Dr. Putzrath

Reconvene Meeting for Day 2 and Review of Key Responses and Recommendations for Charge Questions 1 - 4

After the meeting was reconvened, the Committee and audience took time to review the available recommendations that members had produced overnight and the additional materials provided by Mr. Carpenter. Mr. Carpenter discussed the material he provided. It was decided that the Committee would meet again by conference call after they had time to review this additional information. In particular, they wanted to focus on how to select chemicals that were ready for consideration of additional regulation and how also to highlight research needs. Concern was expressed that the databases used in the selection process still recognized only those contaminants that had already been identified as being of potential concern.

Other Issues Related to CCL3

Lead Discussants for this section were Dr. Christine Owen and Dr. Richard Sakaji. One member highlighted some of the difficulties of using the large number of documents when trying to track the fate of a contaminant. While some of the supporting documentation might, of necessity, be chronological, it was felt that the main, final document should be written in a manner that facilitates readers who are working retrospectively. Another member commented that the process may be appropriate, but that the data may not be accessible or publicly available. There was general support for additional research to obtain the necessary data.

Concluding Remarks

Dr. Rose thanked the Committee and the presenters. The meeting was adjourned by Dr. Putzrath.

Respectfully Submitted:

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Dr. Resha M. Putzrath  
Designated Federal Officer

Certified as True:

/Signed/

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Dr. Joan B. Rose, Chair  
Drinking Water Committee