

**U.S. Environmental Protection Agency  
Office of Research and Development**

**BOARD OF SCIENTIFIC COUNSELORS  
DRINKING WATER RESEARCH PROGRAM SUBCOMMITTEE**

**Conference Call Summary  
September 7, 2005  
1:00 p.m.–3:00 p.m. EDT**

**Welcome**

*Dr. Gary Saylor, Chair, Drinking Water Research Program Subcommittee*

Dr. Gary Saylor, Chair of the Board of Scientific Counselors (BOSC) Drinking Water Research Program Subcommittee, welcomed the participants to the conference call and stated that the purpose of the meeting was to finalize the draft Drinking Water Research Program Review Report. He explained that the Subcommittee will review the draft report line by line and discuss any substantive or editorial changes. Dr. Saylor emphasized that Subcommittee members will not have the opportunity to make substantive revisions after this conference call, although minor administrative or editorial revisions will be accepted. He added that U.S. Environmental Protection Agency (EPA) personnel were on the call and available to answer questions.

The draft report will be reviewed at the BOSC Executive Committee meeting next week, and a vote will be taken to accept or reject the report. Dr. Saylor asked if the Subcommittee had any questions or comments. There were none. Ms. Edith Coates, Designated Federal Officer (DFO) for the Drinking Water Research Program Subcommittee, stated that she had provided the conference call participants with copies of the July version of the draft report for today's review.

**Administrative Overview**

*Ms. Edith Coates, DFO, Drinking Water Research Program Subcommittee, EPA*

Ms. Coates thanked the Subcommittee members for their efforts. She asked if any Subcommittee members needed reimbursement for costs incurred at the review meeting in Cincinnati. There were no outstanding reimbursements. Ms. Coates asked the nongovernmental employees to send their timesheets to her by the end of the week. She asked any members of the public on the call to identify themselves and explained that time had been allotted for public comment at the end of the call. Ms. Coates explained that the meeting minutes will become part of the public record.

**Discussion of the Draft Report on the Review of EPA's Drinking Water Research Program**

*Dr. Gary Saylor, Chair, Drinking Water Research Program Subcommittee*

Dr. Saylor expressed his appreciation for the Subcommittee's work and commented that the draft report was developing nicely as a comprehensive evaluation of the program. He thanked the

participants for their patience, and acknowledged that it took longer than anticipated to get the report to this stage.

Dr. Sayler explained that the draft report represented a “good faith effort” to include the Subcommittee’s major contributions and summations. Objections to any editorial revisions must be addressed during this call. Several questions and comments from Subcommittee members were highlighted in red on the draft; these also need to be addressed today. He reiterated that this was the last opportunity to make changes to the draft before it is submitted to the BOSC Executive Committee.

Dr. Sayler asked the Subcommittee members to review the draft report page by page, beginning with the cover sheet. Dr. James Johnson asked to have “Jr.” added after his name. Dr. James Raymer commented that the Research Triangle Institute now is referred to as RTI International. Dr. Mary Ward noted that the abbreviations “NIH” and “DHHS” should be added after National Cancer Institute. Dr. Sayler mentioned that he would add a table of contents to the report after the conference call.

On page 1, lines 28-32, Dr. Johnson recommended updating the number of public conference calls, which should include the current call. Ms. Coates explained that the first conference call was administrative and, therefore, not public. There were two public conference calls, including today’s call.

On page 2, line 5, the apostrophe should be deleted from “LTG’s.” Line 11 should have a question mark after “funding.”

On page 3, line 26, the extra “while” should be deleted. Dr. Johnson commented that the language in line 21 sounded too informal. Dr. Sayler agreed to revise the wording. On line 29, a period was needed after “systems.”

On page 4, line 1, there should be a comma instead of a semicolon after “directors.” On line 16, Dr. Ward suggested replacing “further constraining” with “which further constrains” and, on line 19, changing “implemented for more” to “implemented to encourage more.” On line 28, the word “were” should be “where.” On line 31, there was an extra “is strongly encouraged.” On line 36, the sentence should read “...ORD runs the risk of becoming too oriented to applications and implementations in their research program...” On line 40, the words “in to” should be one word. On line 43, the word “be” should be deleted, and a hard return should be inserted at the end of the sentence.

The Subcommittee agreed that their primary conclusions and recommendations were included in the summary section. Dr. Sayler asked the EPA participants to notify him of any substantive errors or omissions.

On page 5, line 10, Dr. Johnson asked that “Jr.” be added to his name and suggested adding the word “as” on line 13 after the word “was.”

On page 6, line 37, the heading should be “II.3.1 Introduction.”

On page 7, line 33, “lead and copper and arsenic” should be “lead, copper, and arsenic.” On line 35, “infrastructure is” should be “infrastructures are.” There were no changes on pages 8, 9, and 10.

Dr. Sayler explained that there were questions about the sections beginning on page 11 (i.e., Progress, Strengths, and Opportunities), including a suggestion to add more detail, particularly with regard to outcomes, and to format the text into separate sentences. Dr. Sayler asked the Subcommittee members to comment.

Dr. Selene Chou suggested that on page 11, line 32, the word “the” should be deleted, and the parenthetical phrase “(other than chlorine)” should be added after the word “disinfectants.” She also recommended adding “and to improve the science base for future reviews as required by the Safe Drinking Water Act” on line 33, after the word “review.” A suggestion was made to format this as a separate sentence. Dr. Sayler recommended the following wording: “There could be an effort to improve the science base for future reviews as required by the Safe Drinking Water Act.”

Dr. Chou suggested replacing the first paragraph under Progress with the following:

“Excellent progress has been made in evaluating DBP [disinfection byproduct] reproductive/developmental effects, in developing methods for integrating multi-route exposures and those response data to evaluate exposure to complex mixtures of drinking water contaminants, in developing methods to monitor formation and occurrence of DBPs from source water of different quality, in developing methods to screen and detect DBPs produced from alternate disinfectants, and in awareness of unintended DBP perturbations from processes tailored to minimize a particular class of DBPs, namely when disinfection processes are changed to minimize one class. In moving away from chlorination to minimize THMs, other classes become more significant (e.g., brominated compounds as a result of ozone chloramines). The new compounds then could have toxic effects that need to be investigated.”

Dr. Chou added that this paragraph was contributed by Dr. Raymer, and asked for comments. Dr. Ward indicated that the content was good and suggested breaking the second-to-last sentence into smaller sentences, to which Dr. Raymer agreed. Dr. Sayler asked Dr. Chou to send him the revised text by fax or e-mail.

On page 11, beginning on line 43, Dr. Chou offered the following revision:

“Research results from ORD supported the decrease of the total THM standard stage 1 DBP rule from 100 ppb to 80 ppb. ORD research data on the nonlinear cancer risk of chloroform were used as a basis for supporting the change of the chloroform MCLG from 0 ppb to 70 ppb in the proposed stage 2 DBP rule; ORD data on chronic effects of bromate were critical to the EPA noncancer and cancer risk assessments presented in the EPA Integrated Risk Information System (IRIS) database.” Dr. Chou agreed to send this text to Dr. Sayler.

On page 12, line 10, Dr. Chou added “arising from chlorination” after the word “mixtures.” On lines 16 and 17, under Opportunities, Dr. Chou suggested the following text, which was written by Dr. David Sedlak, and asked for discussion:

“An opportunity exists to develop research to fill data gaps in potential health risks and treatment technology of newly identified DBPs in drinking water treated with chlorination, such as haloacetonitriles. It is noted that hazard identification, biomarker, and mode of action information study of dibromoacetonitriles are listed as APMs for 2003 under APG 12, and that behavioral and neuropathological studies of dibromoacetonitriles are listed as APM 447 and APM 587 for 2005 to 2006.” She explained that ORD’s research program currently addresses dibromoacetonitriles in several APMs.

Dr. Sayler asked what opportunity Dr. Sedlak was trying to capture. Dr. Chou explained that not all haloacetonitriles are being investigated; the opportunity was to develop research to fill data gaps in potential health risks and treatment technology of haloacetonitriles, which are not identified as regulated DBPs. She added that several studies address bromoacetonitriles, so they might add “in addition to bromoacetonitriles.” Dr. Gregory Sayles indicated that he thought haloacetonitriles were classified as emerging or potential DBPs. Dr. Chou asked if they would be included under Long-Term Goal (LTG) 1. Dr. Sayles replied that the DBP work traditionally has been conducted under LTG 1 because the DBP rule is in place and is updated with stage 2. Although there could be some emerging DBPs, that work has been kept in LTG 1 because it is an existing rule.

Dr. Sayler proposed that the first sentence state that opportunities exist to develop this research. He asked Dr. Chou about the second sentence. Dr. Chou replied that the first sentence could be modified so that the second sentence would not be needed. She suggested the following wording: “Haloacetonitriles, other than dibromoacetonitriles, are being addressed in the current....” The Subcommittee agreed with Dr. Chou’s suggestion, and she will send the revised text to Dr. Sayler.

Dr. Sayler asked for comments on LTG 2. There were no comments on pages 12 and 13. On page 14, Dr. Ward suggested that the last sentence belonged under a Challenges section. Dr. Sayler noted that there was no such heading in this section. The Subcommittee agreed to move that sentence to the end of the section, after Opportunities, under a new heading entitled Challenges.

On page 14, Dr. Ward suggested moving the sentences that begin on line 29 to page 16, after line 13. Dr. Sayler agreed and asked for further comments. It was suggested that the semicolon on page 15, line 29, should be a comma.

Dr. Sayler asked the Subcommittee for comments on the following paragraph, which he had written to expand the text on page 16, lines 12 and 13:

“ORD has made contributions to understanding the issue of mixture toxicity, and the complexity of this issue is far ranging. The issue extends beyond simple acute or chronic toxicity to complex synergies and antagonism, extending to the integrative effort in reproductive and

developmental biology. This is expected to continue to grow as an area of priority and concern, and could be a prime territory for STAR solicitations and multi-agency programmatic thrusts for which ORD could lead.”

The Subcommittee agreed to this addition. Dr. Chou noted that some work on DBP mixtures has been accomplished and could be highlighted here. Dr. Sayler commented that this paragraph refers to other mixtures as well as DBP mixtures.

On page 15, line 32, Dr. Raymer suggested deleting the word “not.” He explained that better indicators of early toxicity might be developed as understanding increases regarding how gene expression is modulated down to changes in metabolomes, and he thought that the “omics” could provide a broader scale. Dr. Sayler agreed with the comment but added that, in some areas, “omics” tend to confuse the issue. He agreed to change the text to read: “It is not clear as to the degree that ‘omics’ may or may not contribute.”

The Subcommittee agreed to delete the last paragraph on page 16, which was duplicated on page 17. Dr. Ward provided the following text for page 17 under Strengths, based on her review of the posters and other material: “Good progress on methods to detect cyanotoxins is being made. Progress also is being made on developing approaches to generate information on cyanotoxins, both spatially and temporally.”

She thought that more input was needed and had requested input from Drs. Sedlak and Raymer, who had reviewed the posters in this area. Dr. Sayler commented that the Subcommittee was not obligated to create text to include in this section. Dr. Ward replied that there was little ongoing research in that area. She added that she lacked sufficient information to determine whether other research areas (e.g., methods being developed to detect fecal pollutant sources) could be considered strengths.

Dr. Raymer stated that he liked the sentences about cyanotoxins and recommended adding methods development for monitoring fecal contaminants, noting that both of these research areas should be considered strengths. Dr. Sayler agreed to add text to acknowledge that the Agency is involved actively in new methods development for fecal indicator source identification.

Dr. Raymer commented that several posters addressed the potential health effects from microbial contaminants in water. He added that it is important to examine the health effects of various concentrations, particularly in compromised subpopulations (e.g., human immunodeficiency virus [HIV] populations). Dr. Ward asked if he was referring specifically to cyanotoxins. Dr. Raymer replied that he meant some of the microbials. Dr. Ward thought that this belonged under the Candidate Contaminants List (CCL). The research effort for microbials was mentioned on page 14 under Progress, but it could be added to Strengths. Dr. Raymer replied that the ongoing work in this area deserved mention. Dr. Sayler agreed to add the following sentence to the Strengths section on page 15: “It also appears that research on exposure levels to microbial pathogens and relative risk to susceptible subpopulations is making an important contribution.”

The Subcommittee agreed with Dr. Sayler's suggestion to add the following paragraph under the Opportunities section on page 17:

“Water reuse continues to grow as an area of importance and potential for risk to human health. This is a future source for drinking water with broad applications in the South and Southwest. ORD should fund research on water reuse as an issue on the near-term horizon; ultimately, a strategic research plan for this area will have to be developed in the near- to midterm.”

On page 17, line 41, Dr. Ward recommended changing the first “is” to “in” and the second “is” to “are.” She also explained that she had written some paragraphs to be included on page 18. She noted that the Program Review for the Endocrine Disruptors Research Program did not include a Quality section, which was part of the Drinking Water Subcommittee's charge. She asked if this should be a general section and added that it could be edited to be more general (i.e., by not mentioning CCL research). Dr. Sayler responded that he had drafted the following paragraph to address this issue:

“In general, the mechanisms for ensuring quality are relatively consistent, regardless of whether research is being directed toward LTG 1 or LTG 2. STAR grants report to a peer review process, with Laboratory and Center Directors ultimately prioritizing and selecting the projects for funding based on perceived needs in the overall Agency research plan. Cooperative agreements receive internal peer review, but are not open to an extensive outside review process. This may tend to perpetuate some research efforts that are past their prime, and may leave the Agency open to concerns of cronyism. One could consider a streamlined external review process that could make suggestions to improve the quality and or timeliness of the cooperative venture.”

Dr. Sayler suggested adding this in place of the CCL section and including: “Research relative to the CCL is an applicable model for describing the overall objectives for ensuring research quality.” He stated that the two paragraphs that describe the CCL could be left as they were.

Dr. Johnson suggested making the Quality section a major heading, which would be III, and Scientific Leadership then would be changed to IV.

Ms. Coates asked how the average publication rate of peer-reviewed and total publications per person per year had been determined. Dr. Johnson explained that he had calculated the rate based on the number of publications and the total number of participants in the program. Ms. Coates replied that the participants list included additional personnel, such as administrative and technical staff, which could make his calculation misleading. She offered to provide Dr. Johnson with a more accurate publication rate and a description of how it was derived.

Dr. Sayler asked if there were any additional changes on pages 18 and 19. On page 18, line 28, the word “proscribed” should be “prescribed.” Dr. Sayler noted that lines 22 and 23 included a recommendation for more open-ended calls for STAR grants on CCL-related topics, which should be included in the front summary section. Dr. Sayler suggested modifying an existing recommendation in that section to include that provision, to which the Subcommittee agreed.

On page 20, the heading was changed to “V. Communication.” Dr. Raymer commented that the word “happy” sounded a bit colloquial and suggested using the word “satisfied.” The Subcommittee agreed.

On page 21, line 16, the word “make” should be deleted. On line 17, the extra period should be deleted.

Dr. Sayler asked about including the Subcommittee members’ biographies as an appendix. Ms. Coates replied that she would send out the biographies that she has received so that the Subcommittee members could update them. Dr. Sayler stressed that the updated versions must be returned as soon as possible.

Dr. Sedlak joined the call at this point and agreed to send any small typographical corrections to Dr. Sayler by e-mail. He asked about the statement on page 11, line 16. Were there data in the report to support the assertion that managing residual wastes represents a significant issue? Dr. Chou suggested using the phrase “may represent a significant issue” to qualify the statement. She explained that there is a mandate to manage the treatment of arsenic in waste, which is not being addressed. Dr. Sayler agreed to revise the text to include the phrase “may represent a significant issue” as well as the mandate to treat arsenic in waste.

Dr. Sedlak asked about a reference to endocrine disrupting compounds (EDCs) and pharmaceuticals and personal care products (PPCPs) on page 14, line 5. He stated that EDCs and PPCPs are not CCL contaminants and suggested using the words “relevant compounds” instead of “CCL contaminants.” He also noted that “e.g.” should be “e.g.” The Subcommittee agreed to these revisions. Dr. Sayler explained to Dr. Sedlak that several changes had been made earlier in the conference call and that the changes would be incorporated into the final draft submitted to the BOSC Executive Committee. If the BOSC requests any substantive changes, Dr. Sayler will inform the Subcommittee; however, if the BOSC requests administrative or editorial revisions only, Dr. Sayler will revise the report accordingly and finalize it with BOSC approval.

Dr. Ward asked if Dr. Sedlak had any input for the Strengths section on page 17. Dr. Sedlak did not have any recommendations for that section. Dr. Sedlak asked about references to LTGs on page 1, which are inconsistent with later references in the report (i.e., the current Multi-Year Plan (MYP) lists three LTGs, which subsequently were consolidated into two LTGs). Dr. Sayler agreed to clarify this text.

Dr. Sedlak recommended deleting the words “under any circumstances” on page 4, line 7. To line 8, he recommended adding the need for source water protection in addition to homeland security issues. He commented that currently there is insufficient recognition of the impact of surface water protection issues. He suggested adding “and the further recognition of the impact of source waters on drinking water quality” after “homeland security issues.”

Dr. Sedlak recommended changing the word “engage” to “support” on page 4, line 17. On line 34, Dr. Sedlak suggested changing “global change” to “global climate change.” Dr. Sayler decided that the term “global climate change” was too narrow.

Dr. Ward recommended highlighting the problem of limited resources and the need for partnering with other organizations to leverage resources, particularly in regard to the CCL. Dr. Sedlak suggested including a recommendation to add more funds as well as to partner with other agencies. Dr. Sayler agreed to write the recommendation and include this issue in the Conclusion.

Dr. Sayles, on behalf of the Drinking Water Research Program, thanked the Subcommittee members for their efforts and added that their findings will be considered carefully and used to improve the program, to revise the MYP, and to respond to the PART review. Dr. Sayles mentioned that ORD is establishing a formal procedure to respond to the BOSC program reviews and will be preparing a response to this review. The results of the Subcommittee's work will support all of these activities.

### **Public Comment**

Ms. Coates offered members of the public the opportunity to speak. Mr. John McEnroe, from the city of Golden, was present on the conference call but had no comments.

### **Wrap Up**

Dr. Sayler asked the Subcommittee members to send him their input as soon as possible. He will provide the final draft report to Ms. Coates by Friday, September 9. Ms. Coates will deliver the report to the BOSC Executive Committee for review at its September 12-13 meeting. He thanked the Subcommittee members for their efforts, and adjourned the conference call at 2:45 p.m.

### **Action Items**

- ✧ Nongovernmental employees will send their timesheets to Ms. Coates.
- ✧ EPA participants will notify Dr. Sayler of any substantive errors or omissions.
- ✧ Dr. Chou will send her revised text to Dr. Sayler.
- ✧ Ms. Coates will send Dr. Johnson a revised publication rate and a description of how it was calculated.
- ✧ Ms. Coates will distribute the Subcommittee members' biographies. Subcommittee members will revise and return their updated biographies to Ms. Coates as soon as possible.
- ✧ Dr. Sayler will add the table of contents and make all final revisions to the draft report.
- ✧ Dr. Sayler will send the draft report to Ms. Coates by September 9, and she will deliver it to the BOSC Executive Committee before September 12.

## Participants List

### Subcommittee Members

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**Other Participants**

**John McEnroe**

The City of Golden

**APPENDIX A**

**Teleconference Agenda  
September 7, 2005  
1:00 p.m.–3:00 p.m. EDT**

**US EPA Board of Scientific Counselors  
Drinking Water Subcommittee  
September 7, 2005  
1:00 - 3:00 p.m. EDT**

**Conference Call Agenda  
Participation by Teleconference Only**

**September 7, 2005**

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<b>1:00 – 1:10 p.m.</b>	<b>Welcome</b>	Dr. Gary Sayler Chair, Drinking Water Subcommittee Dr. James Johnson, Jr. Vice-Chair, Drinking Water Subcommittee
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<b>1:10 – 1:20 p.m.</b>	<b>Administrative Procedures</b> Brief review of Administrative Procedures	Ms. Edie Coates (EPA) DFO, Drinking Water Subcommittee
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<b>1:20 – 2:45 p.m.</b>	<b>Discussion of Draft Report on the Review of EPA's Drinking Water Program</b>	Dr. Gary Sayler Chair, Drinking Water Subcommittee
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<b>2:45 – 3:00 p.m.</b>	<b>Public Comment</b>	
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<b>3:00 p.m.</b>	<b>Adjourn</b>	
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