Stage 2 Microbial/Disinfection Byproducts Stakeholder Orientation Meeting

Stakeholder Orientation Meeting

December 15-16, 1998
Park Hyatt
Washington, DC

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FINAL MEETING SUMMARY
March 1, 1999

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I. Welcome and Introduction

On December 15 and 16, 1998 U.S. EPA held a Stage 2 Microbial/Disinfection Byproducts rulemaking (M/DBP) Stakeholder Orientation meeting. Cynthia Dougherty, Director, Office of Ground Water and Drinking Water, opened the meeting by welcoming participants and thanking them for their help in developing the Stage 1 DBP and Interim Enhanced Surface Water Treatment rules over the past seven years. Dougherty also acknowledged the continued dedication and involvement of stakeholders in the M/DBP rulemaking process. Dougherty attributed stakeholder participation as a key element in the Agency's success in developing rules based on a workable agreement. This partnership, stated Dougherty, based on shared information and trust, will play a crucial role in development of the Stage 2 rules. In Stage 2, stakeholders will be able to work from a common baseline of understanding based on the ICR and other research being conducted. This "Stakeholder Orientation" meeting is the initiation of the Stage 2 process. A major issue that stakeholders will have to tackle is how much scientific information is enough to answer questions and move forward? The law requires the use of the "best available science and peer reviewed information." Starting with this meeting, and following in February with the Health Effects Workshop and in March with the ICR and other research workshop, stakeholders will review the information available since the Stage 1 rules were developed. In 1996, when the Federal Advisory Committee (FACA) came together, nobody expected the extent of agreement that was achieved by the group. Dougherty concluded by suggesting that we should be optimistic about our expectations for the Stage 2 process, the history of this group has proved it can find agreement and resolve difficult questions.

On December 16, Chuck Fox, EPA Assistant Administrator for Water, joined the group. Fox thanked the participants for their work in the Stage 1 rules, announced by President Clinton December 4, 1998 in Rhode Island. Fox listed some of the questions he thought this stakeholder group will want to discuss in Stage 2: Do we need to further strengthen DBP regulations? Are their new microbes to focus on? What are the new treatment technologies and costs? EPA has spent tens of millions of dollars on research to ensure that this is a science driven process. Answering these questions and developing the Stage 2 rules will be hard work. Fox closed his remarks by thanking stakeholders for their continued participation.

Introduction

Abby Arnold, RESOLVE, reviewed the meeting agenda and ground rules [Attachment 1], asked the group for short introductions around the room [participants list Attachment 2], and reviewed the purpose of the meeting;

- Review regulatory development history of the M/DBP rules,
- Provide an overview of the Information Collection Rule (ICR) and other research,
- Begin to discuss issues and questions stakeholders think need to be addressed in the Stage 2 rule development, and
- Agree on a schedule for January-April 2000.

This summarizes presentations and captures the main ideas from each discussion. It follows the topic areas of the agenda, but does not restate the presentations. It focuses on capturing the main ideas from the discussions at the meeting.

II. Regulatory History

Ephraim King, EPA, and Stig Regli, EPA, presented the regulatory history of the Stage 1 and Expedited Committee rulemaking leading up to the present Stage 2 rulemaking activities.

Stage 1 (92-93) Negotiated Rulemaking & Expedited Committee (97)

Stig Regli presented an overview of the Microbial/Disinfection Byproduct (M/DBP) rule development activities between the Stage 1 negotiation (1992) and the Provisions in the 1996 Safe Drinking Water Act Amendments relating to microbial pathogens and DBPs [Attachment 3].

In 1992, EPA was under consent decree to propose Disinfection Byproducts (DBP) regulations by June 1993. EPA's major regulatory concern was ensuring adequate microbial protection while reducing risks from DBPs and preventing major industry shifts to use alternative disinfectants until the associated health risks form their DBPs become apparent

Based on recommendations of a feasibility study, conducted by RESOLVE and Endispute, Inc., EPA chose to convene a stakeholder Federal Advisory Committee. The Negotiation Committee was organized under protocol agreed to by all participating parties. This Committee met 7 times between November 1992 and June 1993 and was supported by a technical work group throughout the process and by a drafting group in the latter stages of negotiation. The Committee first agreed to an agreement in principle and then subsequently to rule language. After the final meeting, June 22-23, the drafting group continued to labor over rule language and the preamble. These documents were sent out to Committee members for comment three times, and by the conclusion of this process Committee members agreed to both the preamble and rule language. Unless otherwise noted, the draft rule, published July 1994, adopted the recommendations of the Negotiating Committee and technologies working group and reflected the recommendations in the preamble and proposed regulations.

The Committee agreed to develop the DBP and Interim Enhanced Surface Water Treatment Rule (IESWTR) in two stages. The objectives of Stage 1 were tightened DBP control on all system sizes, simultaneous compliance with the DBPR and microbial (IESWTR) rules to account for risk tradeoffs, and avoid influencing major industry shifts toward use of alternative disinfectants. Stage 2 was proposed in 1994, under the agreement that it would be reevaluated in a continued negotiation process based on data collected through the ICR and expanded research after the promulgation of the Stage 1 rule.

- *Disinfection/Disinfection Byproducts Rule (D/DBPR)*; The Stage 1 D/DBPR proposal would set Maximum Contaminant Level Goals (MCLGs), Maximum Residual Disinfectant Level Goals (MRDLGs), Maximum Contaminant Levels (MCLs), and Maximum Residual Disinfectant Levels (MRDLs) for a variety of DBPs and commonly used disinfectants. The Stage 1 DBPR proposal

would also include enhanced coagulation requirements (to remove DBP precursors) for systems with conventional treatment and requires simultaneous compliance with IESWTR and Long Term 1 ESWTR (LT1). Stage 1 negotiations also proposed a "placeholder" for Stage 2 D/DBPR including MCLs for TTHM (40 ug/l) and HAA5 (30 ug/l) for systems serving over 10,000 people. The placeholder would require EPA to conduct a second regulatory negotiation or similar stakeholder involvement process (beginning in 12/98) to review the proposed Stage 2 levels.

- *Interim Enhanced Surface Water Treatment Rule (IESWTR)*; The proposed IESWTR established future control (beyond the Surface Water Treatment Rule) of microbial risks from pathogens, including *Cryptosporidium*, and laying out multiple regulatory options that would be evaluated when more data became available.
- *Information Collection Rule (ICR)*; The proposed ICR was an effort to increase understanding of the occurrence of microbial pathogens and DBPs and treatment efficiencies for removal of DBP precursors based on 18 months of data collected from water utilities. Data collected form the proposed ICR would support the evaluation of ESWTR options and development of the Stage 2 DBPR (See discussion of ICR - Section III.)

Between 1994 and 1996 EPA's M/DBP activities included: promulgation of ICR; the Partnership for Safe Water; expanded research to support Stage 2 DBP, LT2 ESWTR, and the Groundwater Rule; the development of the M/DBP Research Plan; and the development of the M/DBP Research Council. The 1996 Safe Drinking Water Act Amendments supported the 1994 agreement and added more provisions related to the proposed M/DBP rulemaking process.

A. 1996-1998 Expedited Rules

Ephraim King reviewed M/DBP activities between 1996 and 1998 [Attachment 4]. Following the SDWA 1996 Amendments, EPA faced new statutory deadlines. Between 1996 and 1998 EPA held stakeholder and open technical meetings to discuss various aspects of M/DBP rules. In March 1997, a 17 member Federal Advisory Committee (FACA) was chartered to develop options and recommendations on data collection and assessment. The FACA reviewed new microbial data and technical analysis (not including the ICR) and new DBP data and technical analysis and reached a consensus Agreement in Principle in July 1997. Based on this Agreement, EPA developed two Notices of Data Availability (NODA) in November 1997. In addition, EPA developed another NODA in March 1998 related to new health effects information. The development of these Stage 1 M/DBP rules can be attributed, in large part, to the collaboration and partnership of stakeholders. Future, M/DBP Rules are scheduled to be proposed and promulgated as follows:

Schedule For Future M/DBP Rules

Near Term	**Proposed**	**Final**
LT1 ESWTR (systems serving <10,000)	8/99	11/00
Filter Backwash Rule	8/99	8/00
Ground Water Rule	9/99	11/00
Long Term		
LT2 ESWTR (for all systems)	2/01	5/02
Stage 2 DBPR	2/01	5/02

Support for the implementation of Stage 1 rules includes upcoming national meetings in Denver (1/13/99) and in D.C. (1/22/99), 8 Guidance Manuals (currently in draft and to be finalized in early 1999), State Implementation Guidance, Factsheets and Overheads, Question and Answer documents, are available by contacting the Drinking Water Hotline at 1-800-426-4791 or the Office of Drinking Water Website - www.epa.gov/ogwdw.

Following Regli and King's presentations stakeholders discussed the following points;

- Though deadlines for the completion of the ICR and other research activities have slipped, the schedule for rule development is required in the 1996 SDWA Amendments.
- Though the 1996 SDWA Amendments require that EPA perform a cost/benefit analysis, the new provisions do not require EPA to base the Stage 2 regulations on economic analysis.
- It will be important during the Stage 2 process to be realistic about what data will be available for consideration and what uncertainties remain.

III. Overview of the Information Collection Rule (ICR)

A. ICR Overview

Michael McGuire, McGuire Environmental Consultants, Inc., presented an overview of the Information Collection Rule [Attachment 5]. The ICR is an approximately $130 million effort to collect 18 months of drinking water data from 500 large (those serving greater than 100,000 people) treatment plants across the US. The purpose of the ICR is to obtain microbial, DBP and DBP precursor occurrence and treatment data. ICR data will be used to characterize industry source water, treatment performance and distribution system occurrence on a national and regional level. Data will not be used to determine individual plant compliance. Data is submitted to EPA by utilities and undergoes quality assurance/quality control procedures (QA/QC). Validated ICR data will be entered into the ICR Fed data base. The ICR Data Analysis Plan has been developed by the ICR Technical Working Group to answer questions related to the Stage 2 rulemaking. The Plan is based on the development of 8 auxiliary data bases which will allow the analysis of data from the ICR Fed database in a more manageable form. ICR Fed is too cumbersome to run on an ordinary PC, however, the auxiliary data bases will allow the analysis of different sets of data using manageable software (Microsoft ACCESS) on a PC. The auxiliary data bases were developed based on a list of anticipated questions/uses of the ICR data.

Utilities are also conducting treatment studies to gather data on the ability of GAC and membranes to control DBPs and estimate the costs of implementing these technologies. This data is being compiled in a separate data base to ICR Fed and will be available to support the Stage 2 rule development.

B. ICR Schedule

Jennifer McLain, EPA, presented the ICR data collection schedule, QA/QC, and data availability [Attachment 6]. ICR data was collected from June 1997 through December 1998. The schedule for data download from ICR Fed to Aux 1 is;

- 6 months of data June 1999
- 12 months September 1999
- 18 months December 1999

The Auxiliary data bases will be built and then tested using "dummy" data. Their anticipated schedule for availability:

- Aux 1 - Primary auxiliary data base - final May 1999
- Aux 2 - CT calculation and disinfectant decay - final Sept. 1999
- Aux 3 - Enhanced coagulation analysis - final Sept. 1999
- Aux 4 - Sludge production - final Sept. 1999
- Aux 5 - Washwater return impacts on water quality - final Oct. 1999
- Aux 6 - Distribution system horizontal analysis of DBPs - final Sept. 1999
- Aux 7 - Additional water source impacts on water quality - final Oct. 1999

- Aux 8 - Input and output data base for Water Treatment Plant (WTP) Simulation Program - a model to predict ability of plants to meet proposed regs - final Nov. 1999
- Query Tool - Ad hoc horizontal (through plant) analyses of water quality data - final May 1999

Following McGuire and McLain's presentation the following points were discussed:

- Questions remain regarding how "good" the ICR data is - how much data is rejected during QA/QC. This issue is being considered by the ICR Technical Work Group and will be discussed in further detail at the March 10-12, 1999 M/DBP Stakeholder Meeting.
- Plants included in the treatment studies were screened by water quality. If TOC raw water quality was below 4, EPA did not require a study. A detailed survey of the treatment studies is available in the November 1998 issue of the AWWA Journal.[(1)]
- Most of the data collected by the ICR concerns DBPs. The Technical Work Group anticipates that the Auxiliary Data Bases will be able to answer 80 to 90 percent of all regulatory development questions related to ICR data. The Query Tool should be useful in answering some of the remaining questions. Due to limited time and resources, it is unlikely that additional data bases will be developed.

IV. Overview of Research

Mike Cox, EPA, and Stig Regli, EPA, presented the goals, regulatory context, major questions, and emphasis of additional research conducted in support of the Stage 2 rules [Attachment 7 and 8].

Research needs for drinking water regulations can be split into four categories; 1) health effects and assessment, 2) analytical methods, 3) occurrence/exposure, and 4) treatment technologies. The M/DBP research strategy includes a greater than $50 million research effort to better understand the risks from DBPs and microbial pathogens and a $130 million occurrence and treatment effectiveness data collection effort (ICR). In addition, EPA in collaboration with other interested parties has developed an M/DBP Research Plan and a research tracking system. The tracking system is currently being updated and will be available for the February 10-12, 1999 Health Effects Workshop stakeholder meeting.

There are approximately 175 DBP research projects being tracked by EPA. Cox reviewed the key questions and issues that the research is addressing. These include;

- *Key DBP Policy/Science Question*: What information is needed to justify changing the proposed Stage 1 DBP standards?
- *Key DBP Science Issues*:
- *Health Effects:* risk of DBPs from alternative disinfectants, & risk from brominated vs. chlorinated DBPs
- *Exposure/Occurrence/Methods:* characterization of DBP occurrence and exposure, & analytical methods for key DBPs
- *Risk Assessment:* magnitude of risk from disinfected waters, & balancing pathogen and DBP risks
- *Risk Management/Treatment*: efficacy of advanced treatment methodologies (GAC, membranes) to remove/reduce DBP precursor materials and DBP formation.

Regli reviewed the key questions and issues that research is addressing: there are approximately 200 microbial projects being tracked by EPA.

- *Key LT2 Policy/Science Questions*: What information is needed to justify further enhancements to the treatment technique requirements of IESWTR and LT1 ESWTR?
- *Key Microbial Science Issues*

- *Health Effects*: Risk of infectious disease associated with different levels of microbial source water contamination, & burden of disease associated with exposure to drinking water pathogens.
- *Exposure/Occurrence/Methods*: Characterize occurrence and exposure in source water and in drinking water (since it is difficult to directly characterize pathogen levels in finished water because of low levels and method detection limitations, estimates are based on source water levels and treatment efficiencies)
- *Risk Assessment*: How can overall microbial risk associated with exposure be characterized given the variability and uncertainty in; Dose response? Host response? Virulence of pathogen? (Probability of infection x severity of outcome)
- *Risk Management/Treatment*: What level of key pathogen removal can consistently and reliably be achieved? (can criteria be developed for estimating treatment performance?), Effectiveness of different disinfectants (linked to DBP formation issue), Effectiveness of distribution system management, and Impact of treatment on DBP formation?

Currently, *Cryptosporidium* is used as a target organism because of its relatively high resistance to treatment, especially disinfection. New *Cryptosporidium* detection methods are currently being developed. Certain disinfection and inactivation technologies, such as ozone, chlorine dioxide, and ultra violet (UV), may be effective for inactivating *Cryptosporidium* and other pathogens (substantially more so than chlorine).

Regarding risk balancing for regulatory development, Regli suggested that if criteria could be developed under the LT2 ESTWR that were considered adequate protection for pathogens, this could be the constraint under which further development of Stage 2 DBP could be considered. In other words, the establishment of an appropriate LT2 ESWTR regulatory standard could act as the balance point by which any future DBP controls would be evaluated.

The following points were discussed following Cox and Regli's presentation concerning additional research:

- Research activities listed in the research tracking system should be organized according to the categories used in Cox's and Regli's presentations.
- DBPs that are identified as having health effects in short term studies will be studied in long-term studies.
- The relationship between treatment and precursors is being studied to understand the variability of treatment methods.
- Endemic, not just epidemic risks should be considered.
- Long term cancer DBP studies include protocol to look for other systematic health effects.
- There is health effects research into the mechanism of how bromate causes cancer.
- EPA has developed criteria for the review of new methodologies for measuring *Cryptosporidium*. Criteria will allow decisions on the methods which are the most promising and will be followed by round robin testing to evaluate the most promising methods. Indicators may also help address concerns over pathogen detection methods.

Studies

- There are shot-term and long-term studies. Though not all of the long-term research will be completed by the end of the Stage 2 process, various preliminary results should be available to the Committee before publication.
- There is a prospective epidemiological study by the M/DBP Research Council looking at the association between DBPs and adverse reproductive outcomes.
- EPA and Centers for Disease Control (CDC) currently have a project looking at DBP related short-term effects, including birth effects, in Atlanta and two other sites. Results from this study are expected in 2000-2001.

- There are projects looking at the production of DBPs by disinfection methods, including UV. AWWARF is looking at small scale use of UV, however, no feasibility study has been done looking at the large scale use of UV. Preliminary data on UV show up to 4 log inactiviation of *Cryptosporidium* at dosage levels less that that needed to inactivate. There are still questions surrounding *Cryptosporidium*, *giardia* and viruses, and the reliability of UV treatment methods, however, the potential appears promising.

Cryptosporidium

- ICR will give *Cryptosporidium* data on the order of magnitude of occurrence for systems with high levels of occurrence. This data, along with supplemental survey, spiking study and AWWARF study, will be useful in determining national levels for evaluating potential regulatory impacts.
- If *Cryptosporidium* is found not to be useful for monitoring, EPA may want to consider using fecal coliform (*E.Coli)* or another indicator or pathogen occurrence for designating vulnerability to pathogen exposure and prescribing possible treatment technique requirements.
- Prospects are currently good for understanding inactivation efficiencies of chlorine dioxide and ozone for *Cryptosporidium* in time for Stage 2 negotiations.
- Occurrence of *Cryptosporidiosis* in population as it relates to direct exposure from drinking water should be evaluated. There is a research gap between understanding exposure and related disease occurrence. Use of surrogate (indicator) pathogen may not account for multiple routes of exposure.
- Microbial detection methods may not be available in time to justify changes beyond Stage 1. Stage 2 will need to address the perspectives and views of new method developers and the data concerning the use of indicators.

V. Perspectives on Stage 2 DBPR/LT2ESWTR Issues

Abby Arnold, RESOLVE, facilitated a discussion by stakeholders on the "Major Issues for Discussion in the Stage 2 Process". A list of these issues was developed on December 15 and reviewed and amended by the group on December 16. See **Attachment 9** for the full list of issues identified by stakeholders.

VI. Stakeholder Involvement Process

The second day of the Stakeholder Orientation meeting, Wednesday, Dec. 16, focused on discussions by participants on the Stakeholder Involvement process for the Stage 2 rulemaking, including the formation of a formal stakeholder process and future meetings to discuss Health Effects and the ICR and other research.

A.Convening Process

A. Arnold, presented observations from the M/DBP Stage 2 stakeholder convening, conducted by RESOLVE between September - November 1998 and proposed a recommended decision making process for discussion [Attachment 10]. The convening process was initiated by EPA to answer: *Is it advisable to convene a formal negotiation process?* Based on parties interests, RESOLVE recommended that a formal stakeholder negotiation process be initiated for the Stage 2 rulemaking. However, cautioned Arnold, the Stage 2 stakeholder negotiation presents unique challenges and reaching agreement in Stage 2 may be far more difficult that in Stage 1. These challenges include:

- Stage 1 is currently being promulgated and we don't yet know its actual effect.
- Stage 1 deferred some of the more difficult issues.
- Questions remain about risk and exposure.
- Significant expectations remain from Stage 1.

Other observations from the convening are;

- All interviewed suggested that a formal process is a good idea.
- Parties have different opinions about timing of when the process should begin and what kind of product to expect from the process.
- Expectations from parties concerning stakeholder involvement process influenced parties views. Those involved in the 1994 negotiations agreed that the regulatory negotiation model used in 1994 is preferable.
- There is a different level of expertise, sophistication, and involvement among different parties.
- There are significant differences in interpretation of different studies and subsequently different opinions about risks from DBPs or pathogens.
- Many parties expressed concerns about the schedule of ICR data availability.

In response to questions about what the structure and process of the negotiation committee might be, Chris Kirtz of EPA explained that there is enormous flexibility in the creation of a regulatory negotiation (reg neg) or FACA committee in developing the charter and setting goals. The charter can include a statement of principle that will structure the guidelines for participation in the process. The goals of the committee or operating procedures can be changed by the group. Two weeks are needed for notification of a FACA organizational meeting.

A. Proposed Stage 2 Stakeholder Involvement Process

Arnold proposed a phased stakeholder involvement process, starting with orientation and education and then moving to analysis, generating proposals and finally a negotiating agreement. (See Chart A herein.) Arnold proposed a Public Health Affects Workshop in February, and subsequent informational meeting on research on other treatment technologies, as well as an in-depth overview of what is included in the ICR. Stakeholders discussed options for stakeholder involvement. Most comments were directed at when a formal negotiation committee would be convened. After hearing from many stakeholders around the table that they would prefer to organize a formal negotiation committee soon. EPA proposed that by the end of March a decision could be made whether formal negotiations will proceed and what type of process will be followed. EPA also listed the four guiding principles that EPA would ask participants to commit to if a formal negotiation committee is formed. All parties invited to sit at the table would be asked to agree to at least the following principals:

1. Acceptance of the schedule that allows EPA to finalize Stage 2 rules in May 2002.

2. Agree that the rule will apply to all systems in some way or another.

3. Filter Backwash and LT1 rules are not part of this FACA process. (There will be other stakeholder involvement process for these rules.)

4. A full range of regulatory options will be considered.

None of the parties at the table objected to these principals, and many agreed that they were acceptable. Over the next few months Arnold will work with EPA and stakeholders to develop specific protocol language using the 1997 protocol as a starting point, that includes these principles as well as other groundrules for operation of a formal committee. The protocols will be discussed at the first organizational meeting scheduled for March 30, 1999. Additionally, in the next few months EPA would decide who to invite to participate at the table. Stakeholders were invited to submit comments or concerns about who ought to participate on the committee by Wednesday, December 23, 1998 to either C.Dougherty or A.Arnold.

Chart A: FACA 2 Proposed Phased Approach

Phase I: Orientation and Background [December '98 - March '99]

Purpose:

-Conduct Stakeholder meetings to provide background and orientation that addresses imbalance of legal/process, technical, scientific, process, and political information stakeholders.

Meeting 1: ***Stakeholder Orientation Meeting (December 15-16, 1998)***

Meeting 2: ***Public Health Affects Workshop (February 10-12, 1999)***

Purpose:

-Clarify Public Health Research: What do we know and what are remaining questions?
-Invite researchers of outstanding studies to present their research and declare in public setting what can be concluded from studies.

Meet 3: ***Overview of ICR and other surveys/analysis/Other research on Other Treatment Technologies and Analytical Methods (March 10-12, 1999)***

Purpose:

-Status of ICR, (expected schedule for release and analysis of data)
-Supplemental survey and spiking studies as well as treatment research for the Stage II M/DBP rules.

Phase II: Formation of FACA or Decision to Proceed With A Series of Stakeholder Meetings [April-May 1999]

Purpose:

-Stakeholders and EPA decide to proceed with a regulatory negotiation or another stakeholder involvement process
-Agreement on protocols (spell out process, roles and expectations for each party)

If proceed with formal negotiation process

Phase III: Detailed information On ICR, other material, and option generation begins. [May-Fall 1999 meetings every other month]

Purpose:

-Synthesize information, analyze information and generate list of issues, and
-Begin to generate options for negotiation

Phase IV: Develop and Negotiate Agreement. [Fall 1999 - Spring 2000 meetings every 5-6 weeks]

Purpose:

-Synthesize information, analyze information and craft options for agreement

-Build one text agreement (edit/negotiate)

Phase V: Negotiation Concludes. [April 2000]

A. Public Health Affects Workshop [February 10-12, 1999]

The discussion then turned to the agenda for the Public Health Affects Workshop. Stakeholders reviewed a proposed agenda for the Public Health Workshop presented by Mike Cox [Attachment 11 see Attachment 9 for additional comments]. The draft agenda had been prepared in collaboration with representatives of stakeholders around the table. Participants were invited to participate on a conference call to discuss the agenda and planning for the workshop by submitting their name.

The purpose of the Workshop is to:

- Clarify Public Health Research: What do we know and what are remaining questions?
- Invite researchers of outstanding studies to present their research and declare in public setting what can be concluded from studies.

A. Overview of ICR and other surveys/analysis/Other research on Other Treatment Technologies and Analytical Methods [March 10-12, 1999]

The stakeholders agreed to a third orientation meeting, the purpose of this meeting would be to provide an overview and status of the:

- ICR, (expected schedule for release and analysis of data)
- Supplemental survey and spiking studies as well as treatment research for the Stage II M/DBP rules.
- *Other topics suggested by meeting participants include;*
- Compatibility of data from ICR, Supplemental Survey, and Spiking Studies, and how to manipulate data to answer questions.
- What data on source water is collected by ICR and how could it be used to characterize watersheds.

A. Next Steps/Future Meeting Schedule

Stakeholders agreed to the following schedule for meetings. These include planned meeting and dates set aside, to ensure availability of participants, for future meetings:

Chart B: 1999 STAGE 2 Stakeholder Involvement Schedule

February 10-12	Health Effects Workshop
March 10-12	ICR and Other Research Workshop
March 30	Stage 2 FACA Organizational Meeting
April 15-16	*planned meeting*
May 20-21	*planned meeting*
June 16-17	*planned meeting*

The meeting adjourned at 12:00 noon.

[1.] AWWA Journal Article Citation, Algiere.