Possible Approaches to Implementing the Information Collection/Research Needs Recommendations

Doug Owen
Alan Roberson
TWG Representatives
TCRDS Federal Advisory Committee
January 16, 2008

This Presentation

Objectives

Provisions

System compliance

Improvement

Research

Possible Approaches to Implementing Information Collection/Research Needs Recommendations

Presentation Objectives

- Illustrate the potential of different approaches to organize and implement information collection/ research programs
- Reveal implications for the research plan/ language in the Agreement-In-Principle (AIP)
- Improve upon and apply lessons learned from similar past efforts

There are Many Funding Agencies and Researchers Engaged in DW Research

- Funding Organizations
  - Congress
  - EPA
  - Awwa Research Foundation (AwwaRF)
  - Other federal agencies
    - **CDC, NIH, NTP, USGS, USACE, NSF**
- International
  - UKWIR, KIWA, CSIRO
- Researchers
  - EPA
  - Other federal agencies
    - **CDC, NTP, USGS. USACE**
  - WERF, NWRI, and WateReuse Foundation
  - Global Water Research Coalition
- Other water researchers
  - Academics
  - Consultants
  - Some large utilities

Past Research Implementation Approaches

- Research Council
  - Microbial/Disinfection By-Products (M/DBP)
- Research Partnerships
  - Arsenic
- Congressional earmarks
  - Arsenic and perchlorate
- Regulated occurrence data collection
  - Information Collection Rule (ICR)
  - Unregulated Contaminant Monitoring Rule (UCMR)
- Survey approaches
- Informal coordination

Research Council:
1994 Stage 1/IESWTR Negotiated Rulemaking (Reg-Neg)

- Limited information available during 1992-1993 M/DBP negotiated rulemaking (Reg-Neg)
- Specific research language in agreement serves as building block for future Stage 2 rulemaking
  - Clear research objective
  - Broad-based, collaborative effort
  - Specific timeline(s)
- Many information and research needs led to formation of M/DBP Research Council

’94 Stage 1/IESWTR Research Language

- Clear research objective
  - Item #11—Each party agrees that the intent of the ICR is to provide data and scientific research needed to support Stage 2 or other regulation…
- Broad-based, collaborative effort
  - Item #12—Each party agrees that additional research, particularly on health effects, is needed to develop sound regulations…; supports a cooperative research effort coordinated by EPA and AwwaRF and directed by a committee comprised of EPA, AwwaRF, and representatives of the water supply, environmental, health, consumer, local government officials, and state regulatory parties…Each party also urges a greater priority be given to such research by such federal agencies…

’94 Stage 1/IESWTR Research Language

- Specific timeline(s)
  - Item #13—It is the intent of each party that, by 1998, a research program on DBPs, designed and conducted collaboratively among organizations reflecting the diversity of interests…, would have been implemented. First priority would be give to acute health effects (e.g., birth defects), and, if data warrant earlier action, a meeting shall be convened to review the results and to develop recommendations

M/DBP Research Planning Efforts and Formation of Research Council

- Formation of M/DBP Research Council
- EPA multi-year plan—*Research Plan for Microbial Pathogens and Disinfection By-Products in Drinking Water* (EPA/600/R-97/122, Nov. 1997)
  - Three years after Reg-Neg Agreement
- Drinking water sector research plan efforts
  - 1993 Miami Research Workshop—*Report from Expert Workshop of Microbial and Disinfection By-Products Needs* (Jan. 1994)
    - 71 projects totaling $47 M—36 high priority ($35 M)
  - Follow-up 2001 M/DBP Research Needs Workshop—*Assessment of Microbial and DBP Research Needs: Final Report* (Sep. 2001)
    - 77 projects totaling $41 M—9 distribution system projects

Research Council Lessons Learned

- Agreement language with clear research objective, broad-based, collaborative effort, and specific timeline(s) can result in a robust research plan
- Research planning effort led by others (AwwaRF) can be completed in a timely manner
  - Some research projects can start earlier
- Not a good mechanism for tracking and communicating individual research projects
  - Status of research plan is unclear
- SDWA regulatory deadline ahead of research completion
- Executing research often takes longer than anticipated

Research Partnership: Arsenic Rule Development

- Concern with arsenic health effects began in early 1990s
- 1996 SDWA Amendments set three deadlines:
  - Jan. 1997 - Comprehensive research plan to reduce the uncertainty in assessing arsenic health effects
    - EPA multi-year plan—*Research Plan for Arsenic in Drinking Water* (EPA/600/R-98/042, Feb. 1998)
  - Jan. 2000 - Proposed regulation
  - Jan. 2001 - Final regulation

Research Partnership: Arsenic Rule Development

- Drinking water sector research planning efforts
  - 1995 Ellicott City Research Workshop—*Research Needs Report-Arsenic in Drinking Water* (Chinn, Aug. 1995)
    - 30 projects totaling $19 M (1995 $)—10 high priority ($3 M)
- Arsenic research partnerships implemented plans
  - Accelerated by Congressional earmarks in the late 1990s
  - Second partnership with Sandia Labs focused on treatment
    - More Congressional earmarks

Partnership Lessons Learned

- SDWA deadline accelerated research plan completion
- Narrower range of research topics helped focus effort
  - Primarily analytical methods and treatment research led to easier implementation
- Congressional earmarks help with funding and accelerated the partnership efforts

Earmarks: Perchlorate and the Contaminant Candidate List (CCL)

- CCLs are published every 5 years as mandated by the 1996 SDWA Amendments
  - The CCL is the foundation for selecting (or not) new contaminants for potential regulation
- Perchlorate listed on first CCL (CCL1)
  - Perchlorate treatment studies driven by contamination in San Gabriel Valley in CA
    - Potential major impacts in Southern CA and Dept. of Defense (DoD) as a potentially responsible party
- Congressional earmarks accelerated research
  - Personal contacts through East Valley Water District (EVWD)
  - EVWD, EPA, and AwwaRF jointly sponsored several projects

Regulated Occurrence Data Collection: 1996 Information Collection Rule (ICR)

- Large systems serving >100,000 people required to collect water quality parameters, DBP, and microbial data in 1997 and 1998
  - 296 systems with 500 treatment plants
  - Monitoring cost - $73 M (1994 $)
- Systems above certain DBP triggers were required to conduct additional treatment studies
  - Treatment studies cost--$45M to $76 M (1994 $)
- A significant effort for those directly involved in ICR implementation

Sample Collection Is Not Trivial

Regulated Occurrence Data Collection: Unregulated Contaminant Monitoring Rule

- UCMR contaminants generally come from CCL
  - Occurrence data needed
- All large systems serving >10,000 people (± 3,300 systems) required to conduct monitoring and some have additional screening survey requirements
- First UCMR published in 1999
  - 12 chemicals - MTBE and perchlorate of interest
  - Monitoring cost - $24 M (1999 $)
- Second UCMR (UCMR2) published in 2007
  - 25 chemicals with a monitoring cost of $30 M

Lessons Learned from ICR & UCMR

- Regulated occurrence data collection ensures that it will get done
  - Utilities have to comply, but the effort is not trivial
- Analyze the data you collect - documentation and data analysis are important to justify effort
  - ICR summarized in *Information Collection Rule Data Analysis* (McGuire, McLain, Obolensky, editors, 2002)
  - UCMR summaries available on EPA website
- Know what question you are trying to answer before specifying the data to be collected
  - National occurrence data primary focus for both ICR and UCMR

Survey Approaches

- Survey at statistically representative locations as opposed to a census (regulated data occurrence)
- Some examples:
  - ICR Supplemental Surveys (ICRSS) used improved *Cryptosporidium* analytical method
  - U.S. Geological Survey (USGS) National Water Quality Assessment (NAWQA) surveys representative watersheds
    - Source water monitoring using research lab methods
  - Office of Pesticide Programs re-registration requirements
    - Acetochlor and atrazine are monitored in watersheds where product is widely used

Evaluations of Research Efficacy

- Research integration project by Damon S. Williams Associates (DSWA)
  - Review past research plans and assess integration into final rules
  - Understand how research efforts were (and were not) utilized in the regulatory development process
- EPA analysis of how research outcomes are used in the regulatory development process
  - Retrospective analysis with focus on analytical methods, models and citations in peer-reviewed publications
  - Prospective work to develop feedback mechanism to link EPA research planning to regulatory outcomes

DSWA Research Integration Evaluation

- Review Arsenic and M/DBP Research Plans
  - Identify and catalog each research objective
    - Description of the objective
    - Assigned priority level
    - Individual projects under each objective
    - Anticipated timeframe for completion by project and objective
- Investigation of Final Rules
  - Assign percentage of research completed
    - % Results incorporated in Final Rule
    - % Objectives incorporated in Final Rule
    - % Complete at time of Final Rule (Limited)
    - % Complete now (Limited)
- Results can be presented later if desired

Summary of Potential Research Implementation Approaches

- Distribution system research council or partnership
  - New EPA procurement rules affect awarding of research grants
- Congressional earmarks
  - Federal agencies can't participate in this process
- Regulated occurrence data collection
- Surveys of representative locations
- Informal coordination (corrosion control)

Which approach should be in the agreement?