Overview: Information Collection and Research Needs

Doug Owen
TWG Representative
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This Meeting's Presentations

Objectives

Provisions

System compliance

Improvement

Research

Overview

Committee's Second Charge

Provide advice and recommendations on:

- What data should be collected, research conducted, and/or risk management strategies evaluated to better inform distribution system contaminant occurrence and associated public health risks in the distribution systems. This is intended to "initiate a process for addressing cross connection control and backflow prevention requirements and consider additional distribution system requirements related to significant health risks" called for by the Microbial Disinfection Byproducts Federal Advisory Committee.

Committee's Second Charge

The issues that the TCRDS Advisory Committee may consider include but are not limited to:

1. evaluation of available data and research on aspects of distribution systems that may create risks to public health,
2. identification of priority data gaps, and
3. identification of data collection approaches (such as a data collection rule and/or additional research).

Why collect the data?
SDWA Criteria for Action 1412(b)(1)(A)

- The Administrator shall…promulgate a national primary drinking water regulation for a contaminant…if…:
  i. the contaminant may have an adverse effect on the health of persons;
  ii. the contaminant is known to occur or there is a substantial likelihood that the contaminant will occur in public water systems with a frequency and at levels of public health concern; and
  iii. 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.

Instead of regulation, EPA could also issue guidance or just seek to develop a better understanding of issues

TWG Focus for This Meeting's Presentations

What information will help the FAC members prioritize additional data collection/research that will better inform distribution system contaminant occurrence and associated public health risks in the distribution systems?

TWG Approach

- Identify and review issue categories with the FAC (completed)
- For each issue category (e.g., storage facility integrity), evaluate and determine research/information gaps for:
  - Exposure/Vulnerability
  - Health Effects/Risk

    } Informs magnitude of existing risk
  - Effectiveness of corrective actions/mitigation strategies
- For each gap, determine conceptual level of effort and timeframe to fill the gap

What You Will See For Each Issue

Type of information

- Characterization of issue
- Identification of research and information gaps for:
  - Exposure / Vulnerability
  - Health Effect / Risk
  - Mitigation Strategies
- Conceptual effort and timeline for major gaps

Form of information

- Presentation
- Panel dialogue
- Handouts

Regulatory decisions require the ability to understand:

1. Exposure/vulnerability

- Identify situations that result in significant contamination of public health significance.
- Characterize the contaminants of public health significance that are introduced during those situations.
- Assess the exposure to contaminants (considers occurrence, pathway and host susceptibility).

2. Health Effects/Risks

- Measure health consequences from exposure to the contaminants.
- Monitor for situations which pose a public health concern.
- Measure and track the national significance of the described situations.

3. Mitigation Measures

- Characterize preventative measures or steps to minimize or prevent exposure.
- Identify and implement remediation steps when contamination occurs.
- Quantify the national significance of additional mitigation measures.

The “State” of Current Knowledge

- There is a continuum of information development that underlies each topic area:
  - *Basic Science* - underlying fundamental mechanisms relevant to research topic
  - *Applied Science* - applying fundamental mechanisms to understanding situation in distribution systems
  - *Operational Solutions* – applying understanding of science to system operations to improve water quality
  - *Engineering of Solutions* - applying understanding of science to develop engineered solutions
  - *National Impact* - investigation of mechanisms and solutions to characterize the national distribution of both

Key to Research Gap Summaries

Categories

1. Exposure / Vulnerability
2. Health Effect / Risk
3. Mitigation Strategies

Duration of Effort

(>10 y)
(5 - 10 y)
(1 - 5 y)

Extent of Research Gap

Information required for decisions relatively complete

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+++

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Significant shortfalls in understanding

Gap	Exposure / Vulnerability	Health Effect / Risk	Mitigation Strategy
Gap 1	+++ (5 - 10 y)		
Gap 2			
Gap 3			

List of Research and Information Collection Needs Developed based on State of Current Knowledge

- TWG members and industry experts identified the state of current knowledge for each topic
- Based on the current knowledge, research and information collection needs were developed to:
  - Broadly address needs in each of the three categories
  - Provide an overview research need which may encompass many smaller research projects
  - Complement the current state of knowledge in targeted areas relevant to the FAC charge
- Included an evaluation of the type of research / information collection gap

Duration of Effort Evaluations

- Research requires time and the availability of information is key to decision-relevance.
- The TWG divided the level of effort required to fill research gaps into three broad categories
  - 1 – 5 years
  - 5 – 10 years
  - >10 years

    This breakdown presumes an uninterrupted, adequately funded, focused program of activity
- Duration of Effort evaluations included the following criteria:
  - Availability of methods
  - Availability of data
  - Number and type of prerequisite projects to address each overall research gap

Sequence of Information Collection and Research Needs Presentations

- Possible approaches to implementing the information needs/research needs recommendations (morning)
- Cross connection, backflow and pressure/intrusion (afternoon)
- Storage facilities/new mains & repairs (afternoon)
- Biofilm and nitrification (afternoon)
- Synopses of other issues related to potential distribution systems risks (tomorrow morning)