

SAB Review of EPA's Draft Supporting Analyses for the Proposed  
Revised Total Coliform Rule (RTCR)

## Overview of SAB Review Materials and Charge Questions

**Science Advisory Board Consultation  
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### Objectives of Presentation

- Review list of SAB review materials and provide background information related to the materials
- Discuss overall supporting analyses EPA is developing
  - Explain how overall supporting analyses fit into the context of the Health Risk Reduction and Cost Analysis (HRRCA) requirements
  - Describe the components that form the foundation of the analysis (SAB review materials)
  - Present remaining components of analysis
- Review charge questions and confirm expectations
- Answer questions related to the materials provided

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## SAB Review Materials

- Draft Supporting Analyses
  - Baseline Conditions
  - Occurrence and Predictive Model
  - Benefits Analysis
  - Cost Analysis
  - Errata
- Supplemental Information
  - Draft Supporting Analyses Appendices
  - Draft Technology and Cost Document
  - Agreement in Principle
  - Background on Current TCR and Rule Revisions Development (presentation)
  - Comparison of Current TCR Requirements with the AIP and Alternative Analysis (table)
  - [http://www.epa.gov/OGWDW/disinfection/tcr/regulation\\_revisions\\_tcrdsac.html](http://www.epa.gov/OGWDW/disinfection/tcr/regulation_revisions_tcrdsac.html)

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## Background

- EPA has requested review by SAB Drinking Water Committee (DWC) of EPA's Draft Supporting Analysis for the Proposed Revised Total Coliform Rule to meet SDWA requirements [Sec. 1412(e)]
- EPA's draft supporting analyses serve as the foundation for complying with the HRRCA required by SDWA [Sec. 1412(b)(3)(C)]

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## Background (continued)

- EPA has estimated baseline conditions, net costs, and net benefits of the RTCR using available information, best professional judgment, and an occurrence and predictive model, as described in SAB review materials
- EPA assesses the net changes in risk qualitatively
- EPA modeled an alternative analysis in addition to the AIP

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## BASELINE CONDITIONS

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## Overview of Baseline Conditions

- Provides a profile of initial conditions
  - Systems and populations served
  - Treatment status
  - MCL violation rates
  - Monitoring schedules
  - Occurrence of total coliform (TC) and *E. coli* (EC)
- Adjustments made to initial baseline to account for anticipated changes resulting from GWR
- Analyses provides reference point for understanding net impacts of proposed rule revisions

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## Data/Information Sources

- SDWIS/FED
- Six-Year Review Data
- Economic Analysis for the GWR
- Draft Technology and Cost Document for the RTCR
- Conversations with stakeholders representing industry, states, small systems, etc.

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## SDWIS/FED

- PWS inventory data
  - Profile of systems and population
  - Indication of percentages of systems currently providing treatment (pre-GWR)
- Violation data
  - Provided rates of non-acute and acute MCL violations by PWS size and type
  - Used to validate model for systems serving  $\leq 4,100$  people and use to predict triggers for those serving  $>4,100$  people

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## Six Year Review Data

- States voluntarily submitted electronic monitoring data reflecting records from 1998-2005
- 2005 data used for systems serving  $\leq 4,100$  people
  - Most recent TC and EC monitoring data available and thus most representative of present conditions
  - More records in 2005 than data from 1998 through 2004
  - SDWIS/FED indicated little difference in violation rates across years
  - A full year of data is believed to capture the effects of seasonal variation

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### Six Year Review Data (continued)

- Data were screened for completeness and quality
  - EPA is finalizing a Data Quality Report that explains how the data were obtained, evaluated, and modified where necessary
- Records included data on PWS type, population, source, sample type, sample result, etc.

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### Six Year Review Data (continued)

- Data used to calculate TC and EC percent positive by system size and type and by sample type
- Monitoring records informed EPA's understanding of the proportion of systems on monthly, quarterly, and annual monitoring

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# OCCURRENCE AND PREDICTIVE MODEL

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## Overview of Occurrence and Predictive Model

- First component of model focuses on distribution of routine and repeat TC and EC hit rates
- Second component uses TC and EC occurrence distributions within context of revised rule criteria to predict changes in TC and EC occurrence over time due to RTCR as compared to TCR

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## Overview of Occurrence and Predictive Model (continued)

- Modeled baseline TC and EC occurrence in order to predict monitoring results under the TCR, AIP, and Alternative Analysis
  - Informs net impacts of proposed RTCR
  - Aims at predicting “relative changes” rather than “absolute values.”
- Used 2005 Six-Year Review data to estimate baseline occurrence and to derive a model to estimate triggers (assessments) for systems serving  $\leq 4,100$  people
- Used 2007 SDWIS/FED violation rates to estimate triggers for systems serving  $>4,100$  people
- Did not quantify net change in number of triggers for systems serving  $>33,000$  people

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## General Structure of Model

- Model recognizes differences by:
  - Source water type
  - Treatment status (GWSs)
  - Population served
- Over time, model accounts for changes to systems
  - Disinfection and more stringent sanitary surveys due to GWR
  - Adjustments to occurrence to account for the benefits of any corrective actions that are conducted under RTCR

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## Key Assumptions for Predictive Model (section 5.3.2.2)

- Level 1 Assessment
  - 10 percent will find and address source of problem under RTCR
  - No positive assays for remainder of the year plus one additional year
  - Reduced occurrence (50 percent) for 3 additional years
- Level 2 Assessment
  - 10 percent will find and address source of problem under RTCR
  - No positive assays for remainder of the year plus two additional years
  - Reduced occurrence (25 percent) for 5 additional years
- Included sensitivity analyses to better understand implications of adjusting these assumptions (Exhibit 5.27 and 5.28)

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## **BENEFITS ANALYSIS**

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## Overview of Benefits Analyses

- Output of occurrence and predictive model informed understanding of changes in risk due to:
  - Implementation activities
  - Routine monitoring
  - Repeat monitoring
  - Additional routine monitoring
  - Annual site inspections
  - Assessments
  - Corrective actions
  - Public notification
- Qualitative discussions informed both by judgment and quantitative model output

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## Summary of Qualitative Benefits Analysis

- Overall change in risk relative to the current TCR is a result of the complex interactions of all regulatory components of RTCR
- Improvements to source water quality
  - Reduction in incidence rates of TC/EC
  - Supporting analyses include sensitivity analyses (Exhibit 6.7)
- Greater number of assessments and corrective actions under AIP and Alternative Analysis than under current TCR

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## Summary of Qualitative Benefits Analysis (continued)

- Consensus opinion resulting from TCRDSAC deliberations was that the proposed RTCR, as described in AIP, would achieve a net risk reduction compared to current TCR

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## Summary of Qualitative Benefits Analysis (continued)

**Exhibit 6.1 Directional Change in Risk Under Alternative Regulatory Scenarios Relative to Current TCR**

Current TCR Regulatory Components	Assessment of Potential Changes in Risk <sup>1</sup>	
	AIP	Alternative Analysis
Implementation Activities <sup>2</sup>	No change	No change
Routine Monitoring (including standard and reduced regimens) <sup>2</sup>	Decrease	Decrease
Repeat Monitoring	Increase	Decrease
Additional Routine Monitoring	Increase	Increase
Annual Inspections	No change	Increase
Assessments	Decrease	Decrease
Corrective Actions	Decrease	Decrease
Public Notification	No change	No change
<b>Overall</b>	Decrease	Decrease

<sup>1</sup> Detailed discussion of the rationale for determinations of potential risk for each rule component is presented in the sections immediately following this exhibit.

<sup>2</sup> Assessment of potential changes in risk for monitoring components is an *overall* assessment. Potential changes (or static state) of risk for particular system sizes and types differ according to individual regulatory requirements and are discussed in additional detail in the sections following this exhibit.

Note: Chapter 3 provides a detailed description of the regulatory components for all three regulatory scenarios. Additional discussion of the TCRDSAC process and the rationale underlying the structure of the regulatory alternatives considered can be found in the Preamble to the proposed RTCR.

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## **COST ANALYSIS**

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### **Overview of Cost Analysis**

- EPA calculated net change in costs due to implementation of proposed RTCR
- Overall, estimated annual net costs are approximately \$10M under the AIP option and \$27M under the Alternative Analysis
  - Net increase in state costs estimated to be less than \$0.5M for AIP and \$0.8M for Alternative Analysis
  - AIP significantly less than Alternative Analysis primarily because Alternative Analysis has increased number of samples over AIP

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## Overview of Cost Analysis (continued)

- Increases in net costs primarily driven by increased routine monitoring and corrective actions with smaller contributions from assessments and administrative activities
- Largest cost decreases associated with additional routine monitoring and public notification

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## REMAINING COMPONENTS OF FRAMEWORK

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## Chapters of Economic Analysis not included in SAB Review

- 1. Introduction
  - Summary of document
- 2. Statement of Need for the Rule
  - Describes public health issues addressed, statutory authority, regulatory history, existing regulations, and rationale for the revised rule
- 3. Consideration of Regulatory Alternatives
  - Describes AIP and the alternative option (alternative analysis) that are modeled and analyzed
- 8. Economic Impact Analysis
  - List of executive orders and other requirements and how EPA is addressing them
- 9. Comparison of Benefits and Costs
  - Summarizes outputs of chapters 4 – 7
  - Incremental comparison of regulatory alternatives
  - Summary of conclusions

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## SAB REVIEW CHARGE QUESTIONS

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## Charge Questions to the SAB Drinking Water Committee

1. Is the underlying statistical analysis of the TCR monitoring data used to inform the prediction of the underlying baseline total coliform and E. coli occurrence and violation rates reasonable? If not, what changes or refinements might be appropriate?
2. Is the characterization of the types of corrective actions that systems will implement and the percentages of systems that will implement certain corrective actions reasonable? If not, what else might be considered?

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## Charge Questions to the SAB Drinking Water Committee (Continued)

3. Are the methodology and assumptions used to predict the net impacts in total coliform-positive (TC+) samples, E. coli-positive (EC+) samples, acute violations, assessments, and corrective actions between the current TCR (with and without the effects of the Ground Water Rule), the AIP, and the Alternative Analysis reasonable? If not, what alternatives might be considered?
4. Are reduction in E. coli and TC occurrence and acute violations appropriate endpoints for informing benefits? Do they appropriately capture the added value of the proposed revisions? If not, what other analyses or endpoints might be considered?

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# QUESTIONS?

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