



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

MAY 1 2009

OFFICE OF  
WATER

**MEMORANDUM**

**SUBJECT:** Request for Review by the Science Advisory Board Drinking Water Committee on the Agency's Draft Supporting Analysis for the Proposed Revised Total Coliform Rule

**FROM:** Cynthia C. Dougherty /s/  
Director, Office of Ground Water and Drinking Water

**TO:** Sue Shallal, Ph.D  
Designated Federal Officer  
EPA Science Advisory Board Staff Office (MC-1400F)

This request is for the Science Advisory Board (SAB) Drinking Water Committee (DWC) to review and provide recommendations on the Agency's draft supporting analysis for the proposed Revised Total Coliform Rule. The SAB review will focus on (1) the data sources used to estimate baseline total coliform and *E. coli* occurrence, public water system profile, and sensitive subpopulations in the United States, (2) the occurrence analysis used to inform the benefits analysis, (3) the qualitative benefits analysis used to assess the reduction in risk due to implementation of the rule requirements, and (4) the analysis of engineering costs and costs to States resulting from implementation of the revised rule.

Attached is the charge to the SAB's Drinking Water Committee that identifies the questions that EPA would like the Board to address. The charge also includes background information on the proposed revisions to the Total Coliform Rule. If you need additional information or have questions pertaining to any aspect of this memorandum, please call me or have your staff contact Crystal Rodgers-Jenkins at 202-564-5275 or Jeremy Bauer at 202-564-2775.

Attachments



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**Science Advisory Board, Drinking Water Committee  
Charge on Review of the Agency's Draft Supporting Analysis for the  
Proposed Revised Total Coliform Rule**

The Environmental Protection Agency (EPA), Office of Water, is requesting that the Science Advisory Board (SAB) Drinking Water Committee (DWC) review the draft supporting analysis for the proposed Revised Total Coliform Rule. The SAB review will focus on (1) the data sources used to estimate baseline total coliform and *E. coli* occurrence, public water system profile, and sensitive subpopulations in the United States, (2) the occurrence analysis used to inform the benefits analysis, (3) the qualitative analysis used to assess the reduction in risk due to implementation of the rule requirements, and (4) analysis of the engineering costs and costs to States resulting from implementation of the revisions.

**Background**

The Total Coliform Rule (TCR) is the basic regulation for assuring proper system operation and maintenance and microbial quality. The TCR assesses the adequacy of water treatment, the integrity of the distribution system, and the vulnerability of a system to fecal contamination. In July 2003, EPA published its final decision to revise the TCR as a result of its National Primary Drinking Water Regulation (NPDWR) Review determination.

In 2007, EPA established the Total Coliform Rule/Distribution System Advisory Committee (TCRDSAC) under the Federal Advisory Committee Act (FACA). The charge to the TCRDSAC was to develop an agreement in principle regarding recommendations to EPA on revisions to the TCR and on what information about distribution systems would be needed to better understand and address possible public health impacts from potential degradation of drinking water quality in distribution systems. The TCRDSAC considered the TCR monitoring framework, sanitary survey provisions, definition of Maximum Contaminant Level (MCL) violations and potential follow-up corrective actions, and communication of public health significance of violations. The TCRDSAC considered both technical and policy issues in drafting an Agreement in Principle (AIP) that recommended revisions to the TCR (see <http://www.epa.gov/safewater/disinfection/tcr/regulation.html> for additional information and documentation). EPA is planning to propose revisions to the Total Coliform Rule that have the same substance and effect as the elements in the AIP.

The outputs from the supporting analyses for the proposed revisions to the TCR provide EPA with the opportunity to evaluate the net impacts of two regulatory scenarios in comparison with the existing TCR as it is currently being implemented. The first regulatory scenario is

referred to as the AIP because it is based on the Agreement in Principle discussed above, while the second regulatory scenario is referred to as the Alternative Analysis. The two regulatory scenarios are described in more detail in the “Background on Current TCR and Rule Revisions Development” (presentation) and the “Comparison of Current TCR Requirements with the AIP and Alternative Analysis” (table), included as attachments to this memo.

The following additional background information is provided to facilitate review of the supporting analyses for the proposed Revised Total Coliform Rule (RTCR):

### *Monitoring Data*

The 1996 amendments to the Safe Drinking Water Act (SDWA section 1412(b)(9)) require the Administrator to review and revise, as appropriate, each national primary drinking water regulation not less than every six years. To assist with this review and revision, EPA requested that states voluntarily submit monitoring data (sample results) that were available electronically for specified chemical, radiological, and microbiological contaminants that were collected between January 1998 and December 2005. This request included data collected in compliance with the TCR regarding the presence/absence of total coliforms, *E. coli*, and/or fecal coliforms.

### *Estimating Baseline*

As part of the supporting analyses for the RTCR, EPA estimated baseline or reference levels of occurrence and violations to allow for comparison between the baseline levels and the levels estimated under the regulatory alternatives. For systems serving  $\leq 4,100$  people, EPA used the TCR monitoring results to estimate the baseline occurrence. EPA also estimated the baseline violation rate (using SDWIS/FED violation data) for systems serving  $\leq 4,100$  people.

For systems serving  $> 4,100$  people, EPA estimated a baseline violation rate but did not estimate baseline occurrence because the sample results data systems serving  $> 4,100$  people were not as robust as the data for the systems serving  $\leq 4,100$  people. Estimated changes in violations are used for assessing net impacts for systems serving  $> 4,100$  people.

As described in the materials provided, EPA also developed a second baseline accounting for the expected effects of Ground Water Rule (GWR) implementation. Implementation of the GWR begins in 2009. The GWR implementation will have been on-going for 43 months prior to the expected effective date for implementation of the RTCR.

### *Occurrence and Predictive Model*

The occurrence and predictive model produces outputs over a 25-year time horizon. The outputs include national estimates of total coliform and *E. coli* occurrence in PWSs across the U.S., and the resulting assessments and corrective actions performed. The model additionally includes a national estimate of total coliform and *E. coli* occurrence post-GWR implementation to account for effects of the GWR after it is fully implemented. EPA uses a simplifying

assumption of 5 years of GWR implementation before RTCR implementation begins. Therefore, the predictive model outputs include a total of 30 modeled years.

As described in the attachments, the AIP recommends that the RTCR trigger systems with positive TC/*E. coli* monitoring results to do an assessment, to identify whether a sanitary defect(s) is (are) present, and to correct such defects accordingly. Assumptions used in model development are informed by data (where available), best professional judgment, discussions with stakeholders during the TCRDSAC process, and discussions with states (e.g., that under RTCR, assessments are expected to lead to the identification of 10 percent more sanitary defects requiring corrective actions than under the current rule). The model outputs are used to characterize reduced exposure to the potential contamination under each regulatory scenario.

### *Net Impacts*

Because this analysis is concerned with revisions to an existing rule, it focuses on net impacts expected to arise from the AIP or the Alternative Analysis. As discussed in the attached materials, many of the provisions of the TCR would remain the same under the RTCR, and some provisions that may be required under the RTCR are already occurring to a certain extent under the existing TCR. The relative differences between the options and net impacts should be kept in mind as the individual analyses and their outputs are evaluated.

### **Charge Questions to the Science Advisory Board, Drinking Water Committee**

EPA requests that the SAB Drinking Water Committee review the materials provided and provide recommendations in the areas specified in the charge questions. Each of the following charge questions asks the committee to consider an aspect of the approach that EPA has taken to assess the impacts of RTCR, to determine if that aspect is appropriate given the availability of the information, and, if it is not, to suggest alternatives that might be considered.

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?
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?

**The following attachments have been included to facilitate the SAB discussions:**

- Draft Supporting Analyses
  - Baseline Conditions
  - Occurrence and Predictive Model
  - Benefits Analysis
  - Cost Analysis
- 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)