

Anticipating Changes to the Total Coliform Rule

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Total Coliform Rule

The Total Coliform Rule (TCR) was implemented in 1990 with the objective of protecting public health by requiring public water systems to monitor for fecal contamination in the water distribution system. The TCR consists of a microbial monitoring program using total coliform, fecal coliform, and *E.coli* to check for effective treatment, suppression of regrowth, and distribution system integrity.

The U.S. Environmental Protection

Agency (EPA) is required to review Primary Drinking Water Regulations, including the TCR, at least every six years. After multiple expert workshops, the EPA convened an advisory committee of multiple stakeholders to recommend revisions to the TCR. Some of the concerns identified with the current TCR include:

1. Total coliform (TC) is not necessarily an indicator of fecal contamination. *E.coli* is more indicative of fecal contamination.
2. The number of locations and frequency of sampling place a significant burden on public water systems.

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Table 1: Major Differences Between the Current Total Coliform Rule (TCR) and Revised Total Coliform Rule (RTC)

	Current Rule (TCR)	Revised Total Coliform Rule* (RTC)
Rule Construct	TC MCLG of zero	No MCL/MCLG for TC
	TC monthly MCL based on the number of TC+ samples/month	
	Fecal coliform/ <i>E.coli</i> acute MCL based on FC/EC+ samples	<i>E.coli</i> MCLG of zero; acute MCL Fecal coliform is not used
	PN required for monthly and acute MCL violations	PN not required when only a TC+ PN for a treatment technique violation (assessment or corrective action do not occur)
Routine Monitoring	All public water systems >1,000, take monthly samples according to population	Same as current TCR, except more explicit criteria for small systems (≤ 1,000) to qualify for reduced monitoring
Assessments	None Required	Level 1 - self assessment triggered at current TC MCL level or if public water system fails to take every repeat sample after TC+
		Level 2 – detailed outside assessment triggered by an <i>E.coli</i> MCL or monitoring violation or by frequent Level 1 triggers
Corrective Action	None Required	System must correct all sanitary defects found in the assessment
		If no sanitary defects found in self-assessment, State must approve
Violations and Public Notices	Tier 1 Public Notice - Violation of EC/FC MCL (acute violation)	Same as current, except failure to take repeat samples after EC+ is also an acute MCL violation (both trigger a Level 2 assessment and corrective action)
	Tier 2 Public Notice – Violation of monthly TC MCL	Monthly TC MCL violation is dropped. Tier 2 Public Notice required for a treatment technique violation (failure to conduct assessment or corrective action)
	Tier 3 Public Notice – Monitoring & Reporting Violations	Separate tracking of monitoring and reporting violations
	Public water system must notify state regarding single EC/FC+ result	EPA will request comment on proposed Public Notice language that reflects TC as an indicator and new treatment technique provisions of the revised TCR

Note -*Expected Revisions as Indicated in the Proposed Revised Total Coliform Rule. Final rule expected August 2012.

3. The response to monitoring results could be improved. Because total coliform does not necessarily indicate fecal contamination, public notification for total coliform positive (TC+) distribution samples may cause undue public concern. Also, when violations occur, no corrective action is required.

Revised Total Coliform Rule

In September 2008, the committee issued an Agreement in Principle advising key changes for a revised Total Coliform Rule (revised TCR). Major differences between the current and revised TCR are summarized in Table 1. The EPA issued the proposed rule in August 2010. After public comment, the Agency will issue a final rule in August 2012. The following comparison assumes that the final rule will adopt all the recommendations of the proposed rule.

What's Different

Rule Construct

The revised TCR establishes a treatment technique requirement, eliminating the maximum contaminant level (MCL)/maximum contaminant level goal (MCLG) for TC, with public notification only for treatment technique violations. TC is retained as a system operation indicator, but *E.coli* is retained as a health indicator with an MCL (two TC+ samples and at least one related EC+ sample) and an MCLG of zero. Fecal coliform is abandoned because recent studies have indicated that *E.coli* is a better fecal indicator.

Routine Monitoring

Public water systems will continue to take monthly samples according to population. The revised TCR provides criteria for well-operated small systems to qualify for reduced monitoring.

Assessments

The revised TCR introduces triggered assessments. The intent is to identify sanitary defects that could serve as a pathway of entry for microbial contamination into the distribution

system. A Level 1 self-assessment is required when TC monitoring results show that a system may be vulnerable to contamination. A Level 2 assessment by a qualified party is triggered by an E.coli MCL violation or frequent Level 1 triggers.

Corrective Action

The current TCR makes no provision for corrective action when MCL violations occur. The revised TCR requires public water systems to correct all sanitary defects found during assessments. If the self-assessment identifies no sanitary defects, the public water system must obtain state approval of the assessment.

Violations & Public Notification

The revised TCR retains three tiers of public notification. A Tier 1 public notice will still be issued for acute violations of the E.coli MCL. Failure to take repeat samples after an EC+ will also result in a Tier 1 public notification and trigger a Level 2 assessment. A Tier 2 public notice will be issued when a public water system fails to conduct a Level 1 assessment or complete a corrective action. A Tier 3 public notice will still be issued for monitoring or reporting violations.

Strategies to Eliminate Sanitary Defects

The revised TCR introduces a formalized assessment and corrective action program for public water systems to resolve sanitary defects in their systems. Public water systems can reduce their risk of embarrassing public notices by identifying and correcting sanitary defects before the revised TCR takes effect. The following list contains examples of sanitary defects and corresponding corrective actions:

Excessive hydraulic residence times—

Initiate or expand routine/spot flushing programs. Install auto flushing devices. Modify inlet/outlet piping of storage tanks. Install storage tank mixing devices. Loop dead ends. Install appropriately sized water mains. Modify storage operation. Decommission storage.

Distribution system components—

Replace or repair worn or defective valves, iron pipes, fittings, hydrants, and meters. Install dedicated sampling taps.

Loss of pressure—

Construct new booster pump station. Modify/replace existing pumps. Install variable frequency drives. Construct new elevated storage tank. Install surge relief valve. Install surge control tank.

Storage tank components—

Inspect and clean storage tanks. Line storage tanks. Repair or replace vent screens. Repair or replace tank hatches. Repair damaged storage tanks.

Loss of residual—

Install temporary chlorine/chloramine booster stations. Install permanent chlorine/chloramine booster stations.

Cross-connection and backflow—Install backflow prevention assemblies.

Inadequate monitoring of distribution system—Install online chlorine/chloramines monitoring devices and programming. Install online pressure monitoring devices and programming.

Compromised security—Install additional security measures.

Lack of an operations plan—Develop, implement, and maintain a plan for distribution system operations. Implement additional operator training and certification. ◊