PNWS-AWWA 2009 Conference

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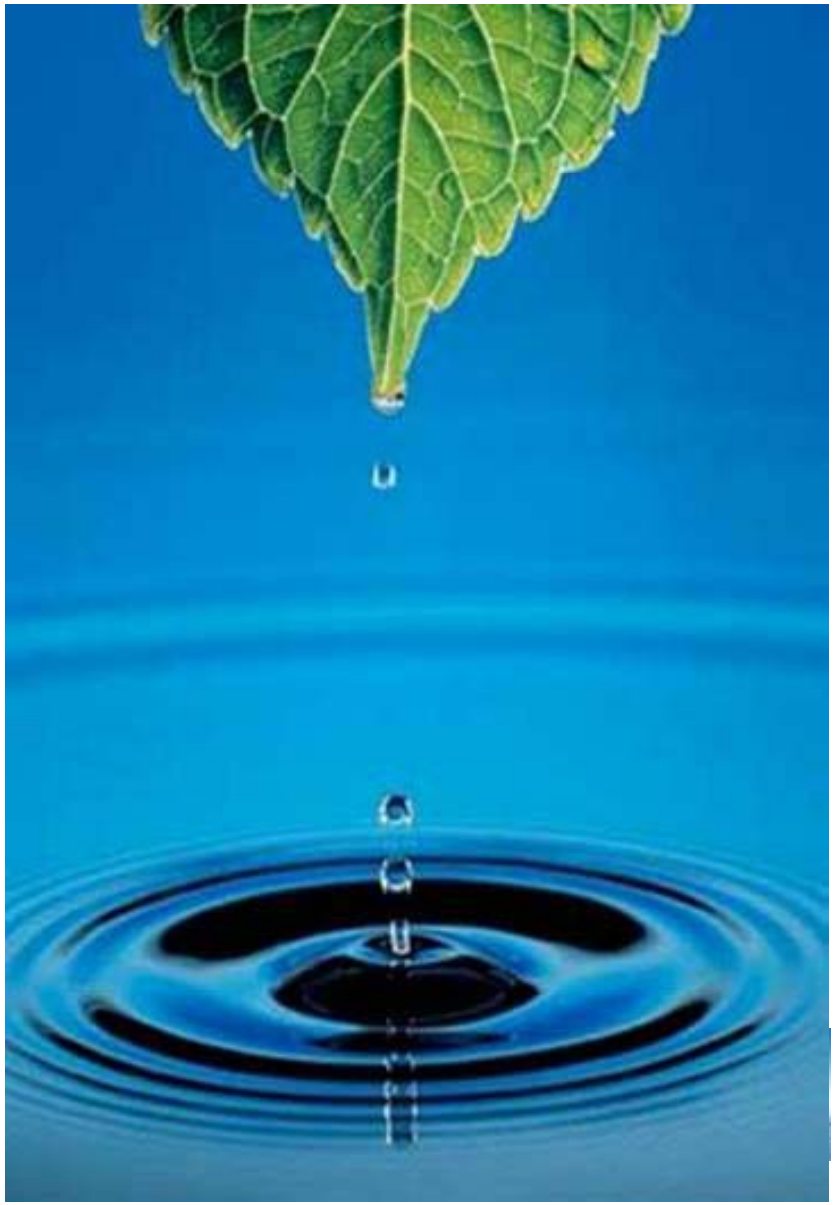
Total Coliform Rule Update



Salem Oregon
May 7, 2009

1989 Total Coliform Rule

Dedicated Sample Sites?

5 Up and 5 Down

Sampling at Reservoirs?

Monitoring Violations

Special Samples

Inconsistencies between States on Implementation

Time for an Update to the Rule

Total Coliform Rule Statistics from SDWIS

160,000 Water Utilities Sampling

3,400,000 Total Coliform Samples Per Year

National Data on Violations
1997 - 2003

	Community Water System	Transient Non CWS
Monthly MCL	4.8%	3.5%
Acute MCL	0.73%	0.68%
Routine: Major MR	7.9%	13.6%
Routine: Minor MR	2.8%	0.9%
Repeat: Major MR	1.1%	1.0%
Repeat: Minor MR	0.8%	0.5%

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The 37-State Dataset

Summary statistics for 2005

- 37 States and Agencies (Tribal Regions)
- 95808 Systems
- 1.6 million Routine Total Coliform (TC) samples (of which 1.4% were positive)
- 74,000 Repeat TC samples (of which 11% were positive)
- About 1 in 1000 Routine samples were positive for E Coli (EC)
- About 1 in 100 Repeat samples were positive for EC

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What does it show us?
Routine Samples

Occurrence rates vary considerably among systems of the same type

TC and EC occurrence decreases with system size

– Highest occurrence rates in smallest systems, but these systems collect far fewer samples than large systems

TC positives are more frequent in undisinfected systems than in systems that disinfect

TC positives are more frequent in non-community systems than in community systems

EC positives are equally rare in disinfecting and undisinfecting systems

– TC positives are more frequent in undisinfected waters, but
– Among TC-positive samples, greater fraction are EC positive in systems that disinfect

What does it show us?
Repeat Samples

Occurrence rates vary by system type (community, noncommunity, transient, nontransient, disinfection status, and size category)

Occurrence rates vary considerably among systems of the same type

Occurrence is much greater than in Routines, but the same basic patterns hold:

- Higher rates in non-community systems
- Higher rates in small systems

Total Coliform Information

Commonly found in Soil

Can Grow in Water Distribution Systems

Not proven as Indicator of Waterborne Outbreaks

Can Indicate a Potential Problem

Easy to test for in 1989 when TCR promulgated

E. Coli Information

Found in GI of Warm Blooded Animals

E. Coli in water = Fecal Contamination

E. Coli in water DOES NOT MEAN DISEASE

Fast/Easy to test for E. Coli in 2007

Other Nations have moved to using E. Coli

Australia	2004
Canada	2006
European Union	2003
WHO	2006

Canada and EU use Total Coliform as check

TCRDSAC Process

Met thirteen times in facilitated meetings

– July 2007 through September 2008

Technical Work Group (TWG)
provided technical support
and data analyses

Developed Agreement In Principle

as the foundation for the proposed rule

– Proposal in 2010, Final in 2012

– Compliance in 2015

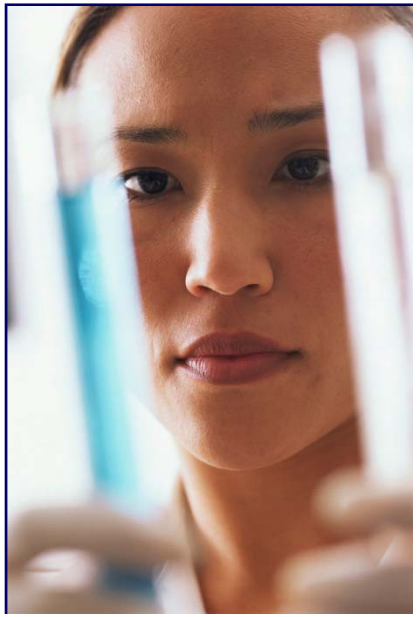
New Total Coliform Rule Construct:

Overall shift in focus

- From: monitoring results informing public notification
- To: monitoring results informing investigation and corrective action

Benefits

- More proactive approach to public health protection
- Reduction in confusion associated with Public Notification (PN) for exceeding total coliform (TC) thresholds



Rule Construct – Monitoring Plans

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Sample siting plans are crafted to "be representative of the water quality in the distribution system" (3.7)

Sampling sites continue to be defined as currently – a submittal acceptable to primacy agency (2.0, 3.7)

Primacy agencies may review and revise entry point samples in monitoring plan to represent undisinfected groundwater sources (3.7)

PWSs can propose flexible repeat monitoring framework rather than rigid 5-up and 5-down (3.5)

Additional samples from accepted sites can be collected and used to calculate compliance (3.6)

"Special samples" are not compliance monitoring samples – existing provision retained and defined (3.7)

Routine Monitoring

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Systems serving > 1,000

– No change

Systems serving < 1,000

– Transition with existing monitoring frequency unless primacy agency determines otherwise

– New criteria for increased and reduced monitoring

More flexibility in sample siting plans

Increased Monitoring Criteria

- Triggered Level 2 assessment
- Treatment Technique violation
- Two monitoring violations within 12 months

Reduced Monitoring Criteria

- Satisfactory sanitary survey results, with protected water source and approved construction standards
- Clean compliance history
- Plus one of the following for CWS
    - Cross connection control program
    - Meet disinfection criteria
    - Other equivalent enhancements as approved by primacy agency
- Annual site visit required for annual monitoring for NCWS

Repeat Monitoring

No changes for systems serving > 1,000

For systems serving < 1,000

- Reduces repeat monitoring from 4 samples to 3 samples
- Groundwater systems must still take an additional source sample to comply with Groundwater Rule (GWR)

E. coli MCL Violation

Definition

- Routine and repeat TC+ samples, with at least one EC+ sample, or
- Failure to take required samples following a routine EC+

Consequences

- Tier 1 Public Notification
- Consult with primacy agency no more than 24 hours after learning of the violation
- Level 2 assessment/corrective action

Violations:
Treatment Technique Violation

Definition

- Failure to perform a triggered Level 1 or Level 2 assessment, or
- Failure to correct all sanitary defects identified in an assessment, or
- Failure to correct sanitary defects according to agreed upon schedule

Consequences

- Tier 2 Public Notification
- Repeat Public Notification every 3 months as long as violation or uncorrected defect persists

Violations:
Routine Monitoring Violation

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Definition

– PWS does not take required routine or additional routine samples

Consequences

– Tier 3 Public Notification (can use annual consumer confidence report)

Violations:
Reporting Violation

Definition

– PWS fails to submit a monitoring report or assessment form, or fails to submit a report by the required date

Consequences

– Tier 3 Public Notification (can use annual consumer confidence report)

Principles of Assessment Procedures

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Proactively enhance public health

- Identify sanitary defects
  - Sanitary defect defined to be “a defect that could provide a pathway of entry for microbial contamination into the distribution system or that is indicative of a failure or imminent failure in a barrier that is already in place.”
- Identify incorrect monitoring practices

PWS is typically responsible for assessment

- Strengthen capacity to ensure barriers are in place and effective

Principles of Assessment Procedures (cont'd)

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Assessments address:

- Inadequacies in sample sites/protocol/processing
- Atypical events affecting water quality
- Changes in distribution system maintenance and operation
- Source and treatment considerations
- Existing water quality monitoring data

EPA will develop guidance that reflects these elements

What is a Level 1 Assessment?

Completed by Public Water System

Identifies:

- Sanitary defects detected
- Corrective actions taken
- Timetable for corrective actions not yet completed

Reviewed by primacy agency to:

- Establish that the problem has been corrected
- Determine if the likely cause has been identified

What Triggers a Level 1 Assessment?

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Systems taking ≥ 40 samples: 5.0% TC+ samples

Systems taking < 40 samples: 2 or more TC+ samples

Failure to take all required repeat samples

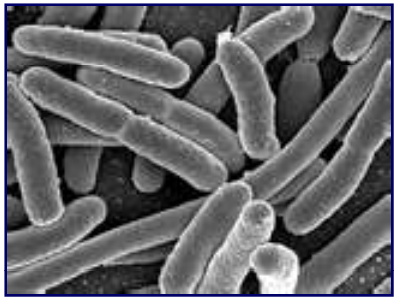
What is a Level 2 Assessment?

More detailed and comprehensive than Level 1 Assessment

Conducted by PWS, provided the system has:

- A certified operator with 2 years experience, or
- Individuals with equivalent experience as approved by the primacy agency

What Triggers a Level 2 Assessment?



E. coli MCL violation

E. coli monitoring violation

Second Level 1 trigger within a rolling 12 month period (unless primacy agency determines the system has corrected the initial problem)

Level one trigger in two consecutive years (systems on annual monitoring only)

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Corrective Action

Systems must correct all sanitary defects found in the assessment

Sanitary defect defined to be

– “a defect that could provide a pathway of entry for microbial contamination into the distribution system or that is indicative of a failure or imminent failure in a barrier that is already in place.”

Distribution System Rule

EPA commits to Research and Information Collection Partnership (4.1)

Research Priorities are (4.2) **:**

- Cross-connection and backflow
- Storage facilities
- Main construction and repair
- Pressure and intrusion

Recommended process (4.2) includes

- Building a conceptual framework for research program
- Research on key issues like health impact and fate of contaminants

Funding remains to be developed

Cross Connection Control
Backflow Prevention

Proven Source of Negative Health Effects

Incident Information Available

Many Good State Programs

Key Issue – On Premise Plumbing

Main Repairs Concerns

- Main Depressurized
- Unsanitary Trench
- Flushing after Repairs?
- Follow Up Bacteria Sampling?
- Increase with Aging Infrastructure?

Finished Water Storage

Loose Vents

Hatches Not Sealed

Leakage thru Roof/Walls/Floor

Gideon Missouri – 7 deaths

- Birds/Bird Droppings in tank
- Positive Coliform Samples

Acknowledgements

Information and Data Compiled from TAW Members, White Papers, EPA Sources, AWWA Information

Key Individuals were:

Michael J. Messner, US EPA Office of Water
Ken Rotert – US EPA Office of Ground Water and Drinking Water
Jeffrey S. Rosen, Clancy Environmental Consultants,
Vanessa Speight, Ph.D., P.E. Malcolm Pirnie, Inc.
Steve Via, AWWA

Thank You

Questions????

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