pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Bureau of Safe Drinking Water

# Proposed Rulemaking
# 25 *Pa.Code* Chapter 109
# Revised Total Coliform Rule

## Environmental Quality Board Meeting

## April 21, 2015

# Background and Purpose

- Incorporate federal requirements needed to obtain primary enforcement authority (primacy)
- Provide for the increased protection of public health at public water systems (PWS)
- Promote healthy and sustainable communities

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

# Background and Purpose

- Incorporate the federal Revised Total Coliform Rule (RTCR) and address distribution system sanitary defects
- Make minor corrections to obtain primacy for the Long-Term 2 (LT2) Enhanced Surface Water Treatment Rule and Stage 2 Disinfectants / Disinfection Byproducts Rule (Stage 2 DBPR)
- Include several other general updates to clarify and strengthen existing requirements

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

# Significant Provisions: RTCR

- Monthly monitoring for all water systems
- New requirements for seasonal systems
  - Start-up procedures and additional samples
- New assessment requirements – “Find and Fix”
  - Self-assessment (Level 1) or a more detailed assessment (Level 2) depending on the severity and frequency of contamination
  - Replaces current non-acute MCL violation and public notice requirements for total coliforms

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

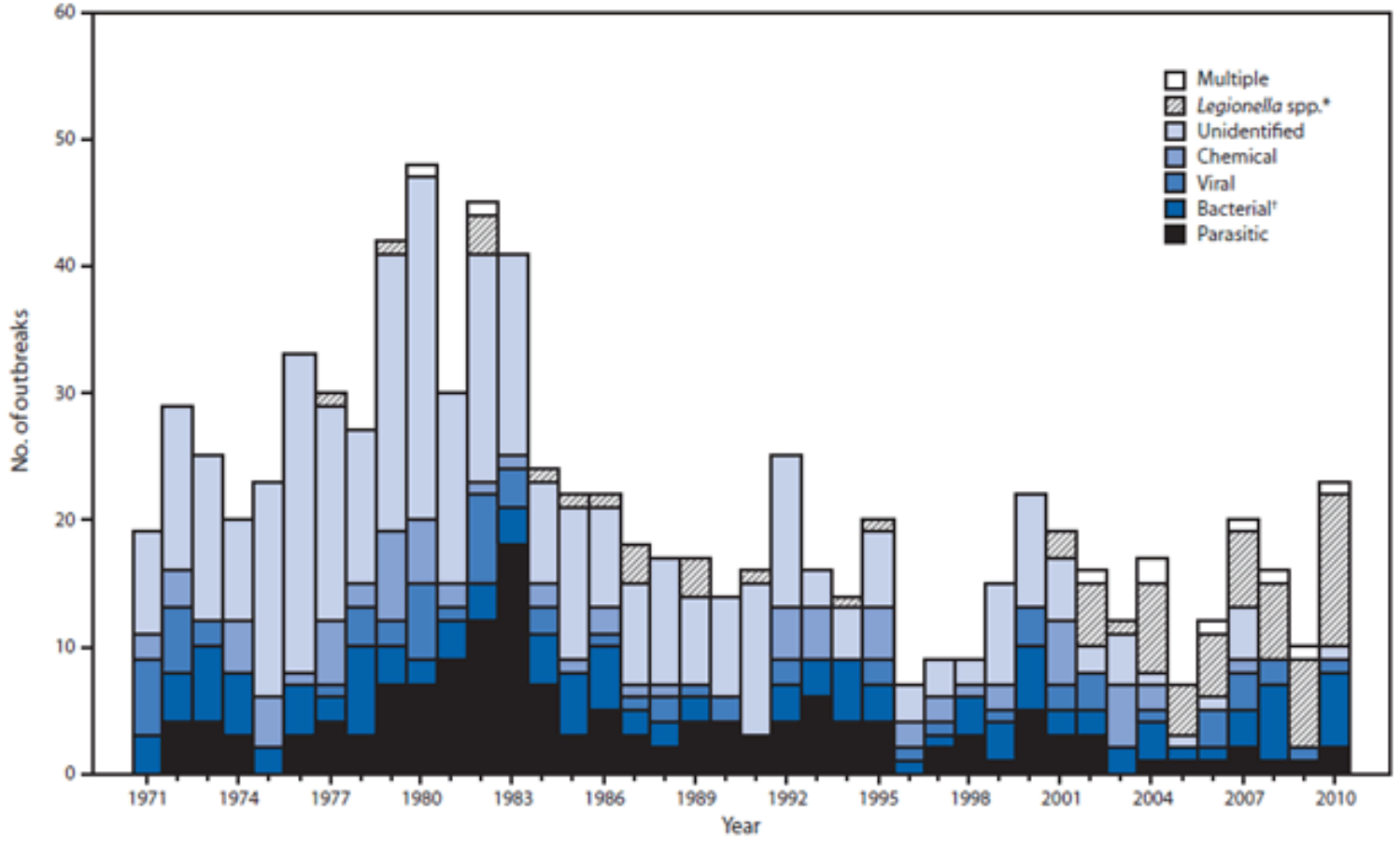
# Significant Provisions: RTCR

Why is it important to find and fix sanitary defects?

- Sanitary defects include low/no disinfectant residual, ineffective O&M practices, waterline breaks/leaks, cross-connections, poor storage tank maintenance practices, etc.
- Sanitary defects can lead to the degradation of water quality, contamination, and waterborne disease outbreaks

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

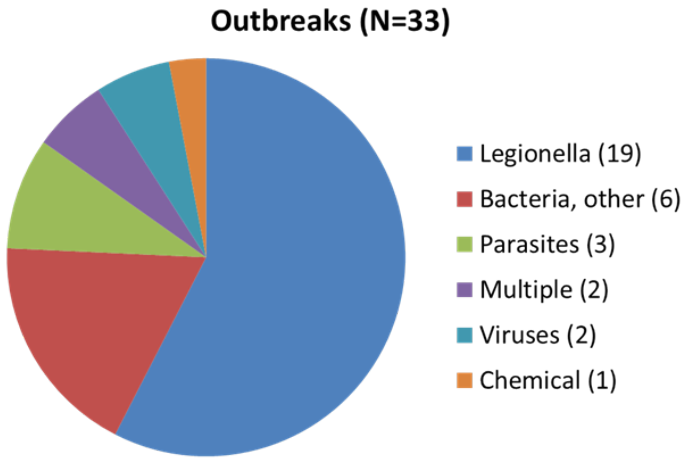
# National Waterborne Disease Outbreaks

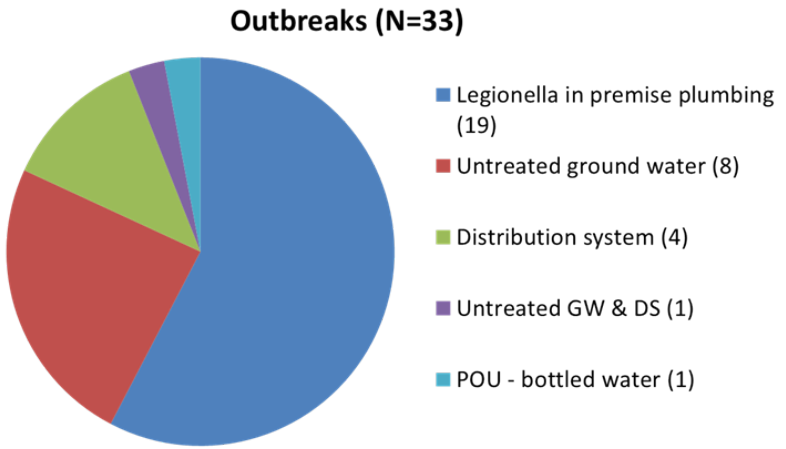



Source: CDC, MMWR, Vol. 62, No. 35, September 6, 2013

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

# National Waterborne Disease Outbreaks




pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

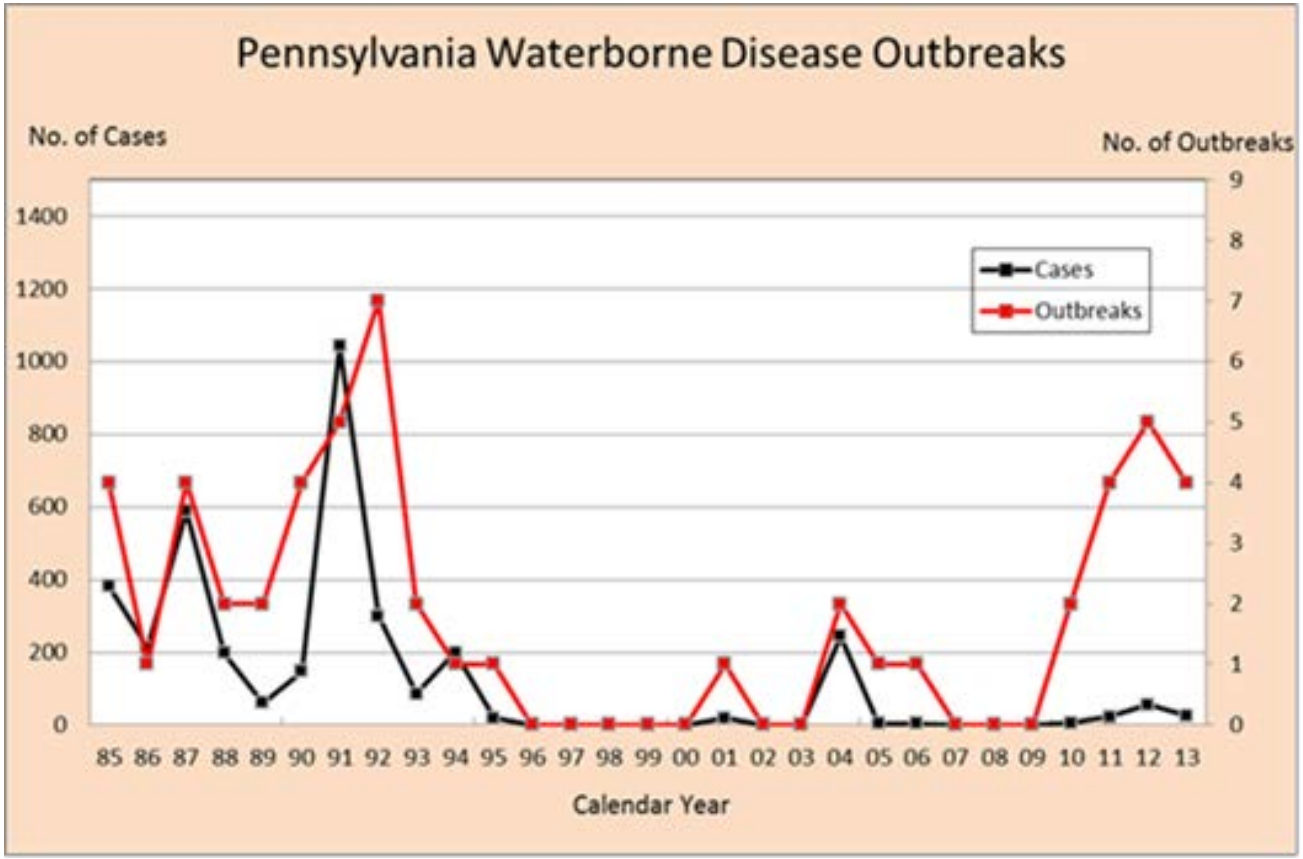
# National Waterborne Disease Outbreaks

Regarding the incidence of distribution system deficiencies and waterborne disease outbreaks:

- Distribution system and premise plumbing deficiencies continue to be a major contributor to outbreaks.
- The distribution system is the remaining component yet to be adequately addressed in national efforts to eradicate waterborne disease.

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

# Pennsylvania Waterborne Disease Outbreaks




pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

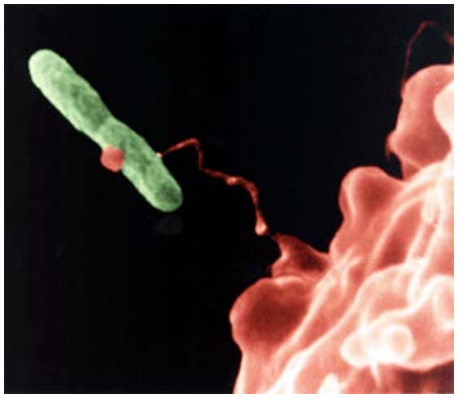
# Legionellae

- Causes Legionnaires' Disease (pneumonia) and Pontiac Fever
- Mode of exposure – inhalation or aspiration
- No safe level of Legionella
- Mortality rate is 5 - 20%

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

# Legionellae

Legionellae:

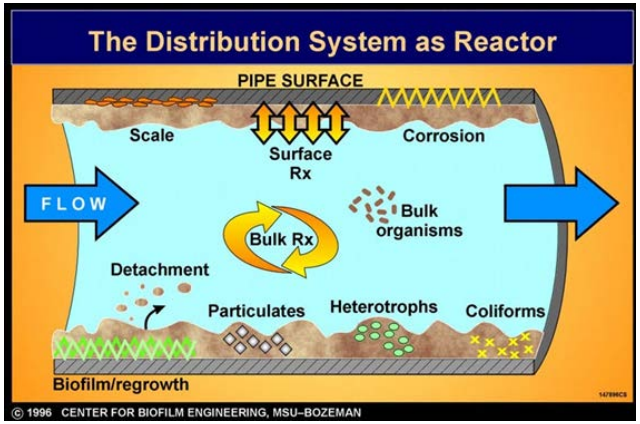


- Are ubiquitous in water
- Are persistent
- Have a unique ecology, flourish in biofilms, and can survive over a wide range of temperatures
- Can be present even when water meets safe drinking water standards

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

# Challenges Associated with Legionellae

Legionellae can colonize and multiply within water pipes due to:




- Lack of disinfectant residual
- Excessive water age and residence times
- Ideal water temperatures (25 - 42°C)
- Presence of nutrients, sediment and biofilms

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

# Pathways of Contamination

Pathogens can be introduced into potable water lines through:

- Treatment breakthrough
- Cross connections and backflow
- Leaking pipes, valves, joints and seals
- Water line breaks, repairs, and new construction
- Storage tanks

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

# Current Knowledge of Control Measures

Legionella control may involve multiple approaches, such as:

- Finding and fixing sanitary defects to limit entry of pathogens (as required under the RTCR)
- Maintaining adequate disinfectant residuals
- Improving hydraulics and water quality to control biofilms
- Implementing effective O&M and BMPs

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

# Other Significant Provisions

- Increase the minimum disinfectant residual to 0.30 mg/L free chlorine (or 0.50 mg/L total chlorine) throughout distribution system
- Distribution disinfection provisions will:
  - Help control Legionella and other pathogens
  - Ensure adequately disinfected water is delivered to all customers
  - Establish a comprehensive treatment technique
  - Make PA consistent with industry and other states' standards

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

# Other Significant Provisions

Simultaneous compliance issues are a concern with distribution disinfection provisions:

- Increased residual requirements could lead to increased disinfection byproducts
- Systems should be able to meet the new standards through better operations and BMPs, which will reduce chlorine demand and improve overall water quality

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

# Other Significant Provisions

- Require pre-drilling plan, source assessment, and SWIP testing *prior to* source approval
- Surface Water Provisions
  - Revise turbidity monitoring and reporting requirements
  - Mandate alarm and shut-down capabilities for filter plants
  - Require daily CT calculations to determine log inactivation of giardia and viruses

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

# Applicability of RTCR

- Federal RTCR provisions apply to all PWSs
- Source water protection revisions apply to community water systems
- Turbidity revisions apply to PWSs using surface water sources
- Disinfection revisions apply to all PWSs *except* transient noncommunity water systems without 4-log treatment of viruses

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

# Comparison to Other States

- The federal RTCR will need to be complied with or adopted in all 50 states
- At least 14 other states have turbidity monitoring and recording standards similar to the proposed regulations
- At least 19 other states have more stringent distribution disinfection requirements, including several nearby states such as West Virginia, Delaware and Ohio

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

# Expected Results

- The avoidance of health effects from the consumption of contaminated drinking water
- The continuity of a safe and adequate supply of potable water
- Increased protection of public drinking water sources

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

# Expected Costs

- Expected RTCR costs per system type:
  - CWS: $126.77 per system/year
  - NTNC: $128.90 per system/year
  - TNC: $229.31 per system/year
- All other costs associated with this regulatory package could vary as not every PWS will have to comply with all of the proposed provisions

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

# Public Outreach

- DEP drinking water field staff meeting January 2014
- Technical Assistance Center for Small Water Systems (TAC) meetings:
  - June 18, 2014 & September 23, 2014
- Proposing a 60 day public comment period with two public hearings

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

# Implementation Strategy

- The federal RTCR begins April 1, 2016
  - Negotiated extension agreement effective through February 2017
- Provisions that may require significant capital costs are effective one year from the date of the final publication
- Classroom training and web based training to begin summer 2015

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Bureau of Safe Drinking Water

**Kelly Heffner**
**Deputy Secretary for Water Management**

**Lisa Daniels**
**Director, Bureau of Safe Drinking Water**

**Bill Cumings**
**Bureau of Regulatory Counsel**