



# **The RTCR and Chlorine Residual Standard and its Operational Impacts on the Utility**

***Gary A. Burlingame***

**Small Water Systems Technical  
Assistance Center Board**

**Tuesday May 26, 2015**

# **I'll Get Right to the Main Point**

- **YES, let's incorporate the federal Revised Total Coliform Rule into our State's regulations. The EPA used a science-based process, over two years or more, to carefully craft this revised rule.**
- **BUT, it's premature to change the requirements for total chlorine residual. And change is not needed to begin implementation of the RTCR.**
- **HOWEVER, we can continue to discuss whether there is a need to change the requirements for chlorine residual, using a better process so that Pennsylvania can be a leader in good policy as informed by the latest science and good practice.**

# Philadelphia Water

- Municipally owned
- Water, wastewater, stormwater, watersheds
  - 245 MGD avg for drinking water
  - Serving about 1.7 million people
  - Over 3000 miles of water pipe



# So why listen to me?

**Because I was there!**

- **1979** at Drexel University helping develop the science behind the existing TCR
- **Since 1982**, in Philadelphia, gaining firsthand experience with sampling, responding, research, and compliance on distribution system water quality
- **1984** first published paper on coliform detection

# I was there!

- When PWD **provided background data for the TCR** and then evaluated its implementation and shared the lessons learned during the 1990s
- **I have been involved, for more than 20 years, with multiple research projects on distribution system water quality, through the Water Research Foundation**

# I was there!

- Member of the **technical support team for the Federal Advisory Committee** that developed the RTCR
- Member of the steering committee for EPA's **Research and Information Collection Partnership** that is accumulating the latest science to determine if regulatory changes are needed for distribution system water quality

# Because I was there....

- **I can tell you that best practices, scientific data, and our understanding of public health protection do not support DEP's proposed changes to chlorine residual requirements for the distribution system.**
- **The way we do it now (inform our local DEP based on total chlorine and HPC) is consistent with the Treatment Technique rule and can be effectively used to identify systems with distribution problems.**

# **Implementation of the RTCR *does not* require any changes in how total chlorine residual is regulated**

- **The occurrence of total coliform does not correlate to the level of chlorine residual in the distribution system.**
- **If you take tap water and let it sit in a clean bottle for a month until the chlorine residual drops to zero, the water remains safe to drink. Zero chlorine does not spontaneously create a health risk.**

# **We are using a Treatment Technique!**

- **EPA changed the use of coliform from an MCL to a Treatment Technique parameter because it's a more appropriate use of an indicator.**
- **A single positive result should not trigger confusing and counterproductive public notification.**
- **It's the failure to take action that triggers public notification.**

# What about Sanitary Defects?

(this is new in the RTCR)

- **A Sanitary Defect is defined as a *pathway* for contamination (like a hole in a storage tank through which dead birds can get into the drinking water). Chlorine residual is one possible indicator that a pathway may exist, but it is *not a pathway*.**

# **Changing the regulation for chlorine residual needs careful review before a number is set**

- The SDWA requires that disinfection byproduct formation and microbial disinfection be carefully balanced so that changes in one do not negatively impact the other.**
- This has not yet been done.**

# **DEP's proposals, to date, would require:**

- **14 chlorine and ammonia booster stations throughout Philadelphia's more than 3000 miles of distribution pipe, and two chlorine contact chambers at entry points.**
- **The installations would take about 10 years, and the capital costs would exceed \$ 100 million.**
- **Annual operating costs (chemicals, FTEs, O&M) are estimated at \$5 million.**

# **DEP's proposals, to date, would require:**

- **Retrofitting about 80 monitoring locations with curbside taps connected directly to the water mains, costing an estimated 800,000 dollars (triple that if adding up/downstream locations ) not including O&M costs.**
- **Commercial and public buildings typically have large service connections that give falsely low results for the water that is delivered.**

# **And it can't be done!**

- **We are a member of the Partnership for Safe Water, Distribution System Optimization Program which has been collecting data for a few years now, and so far the data confirm that the DEP's proposed changes are not achievable.**

# Remember – It's about process control

- **Total chlorine residual is not the same as *E. coli*. Total chlorine residual monitoring provides feedback in a process control. The presence of *E. coli* suggests contamination of the water. In process control, one conducts control charting and mapping to manage the system. Single values are misleading and lead to wrong action.**

# **Chlorine Residual is a part of a bigger whole**

- **National research has not yet determined a number for chlorine residual. Rather, it suggests that multiple actions be in place such as a cross connection control, storage tank maintenance, and new main disinfection. These are already in place and the DEP looks at these during their Sanitary Surveys.**

# **Public Notification is an inappropriate action**

- **Public notification, when a single or small number of low chlorine residuals are detected, would be counterproductive, contrary to the purpose of the Treatment Technique approach, confusing to our customers, and would cause public outcry because the number of notifications would be large and continuous throughout the summer months.**

# **Let's make better use of limited resources!**

- **Public monies would be better spent on getting the DEP out to systems that are struggling to manage their compliance.**
- **The DEP already has what it needs for regulations to identify problem distribution systems.**

# Please Consider....

- **NOT changing the regulation for chlorine residual. A change is NOT needed to implement the RTCR. A change is NOT needed to identify problem distribution systems.**
- **Recommending that the RTCR, as developed by EPA, continue to move forward while changes for chlorine residual proceed at a pace that is more appropriate for using a science-based process.**

# Please Consider....

- **Recommending that the DEP use an open, transparent, science-based, and thorough review process for addressing their concerns about chlorine residual requirements.**
- **PWD will even host a technical workshop this summer to get this going. We will do our part to improve public health protection in PA!**

**Thank You**