

3136

Chester Water Authority

RE: Comments to the PA DEP Proposed Disinfection Requirements Rule

April 19, 2016

Annex A

TITLE 25. ENVIRONMENTAL PROTECTION

PART I. DEPARTMENT OF ENVIRONMENTAL PROTECTION

Subpart C. PROTECTION OF NATURAL RESOURCES

ARTICLE II. WATER RESOURCES

CHAPTER 109. SAFE DRINKING WATER

Subchapter A. GENERAL PROVISIONS

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General Comment

Chester Water Authority (CWA) is supportive of the Pennsylvania Department of Environmental Protection's (DEP) efforts to increase public health protection by adopting regulations:

- a. when there is a valid, documented public health issue in Pennsylvania that needs to be addressed;
- b. when there is sufficient accurate, scientific data to support more stringent regulatory changes;
- c. when cost analyses are accurate and represent defined costs that public water suppliers will incur;
- d. when accurate, scientific analyses demonstrate that simultaneous compliance evaluations have been performed to assess the complete impact to public water systems;
- e. when an accurate cost-benefit analyses has been performed to demonstrate that meeting newly proposed regulations will not jeopardize or compromise compliance with current drinking water regulations with known and documented valid health effects;
- f. when the proposed regulatory changes will indeed provide a benefit to public health protection; and
- g. when the regulatory changes are needed to maintain primacy.

2. Specific Comments to Preamble

A. *Effective Date*

“This proposed rulemaking will go into effect upon final-form publication in the *Pennsylvania Bulletin*. The submission of a sample siting plan is required 6 months after promulgation to allow time for development of the plan.

The Board is seeking comment on whether other provisions of the proposed rulemaking should be deferred. For example, some systems may need up to 6 months to make operational changes and effectively increase disinfectant residuals to 0.2 mg/L throughout the distribution system. If capital improvements are needed, a system-specific compliance schedule may be needed. Comments on the anticipated length of time needed to increase disinfectant residuals and whether capital improvements are anticipated to meet the proposed requirements are requested.”

CWA Response: Based on public water suppliers anticipated costs that were presented at Small Water Systems Technical Assistance Center (TAC) Meetings, Large Water Supplier Meetings and the Stakeholder meetings, that demonstrated significant capital and operating expenses, CWA recommends that the provisions of the proposed rulemaking be deferred. CWA anticipates that public water suppliers will need 24 to 36 months to fully implement the capital and operating changes to increase the distribution residuals to 0.2 mg/L. However, CWA supports the TAC and Stakeholder recommendations to establish a minimum disinfection residual of 0.1 mg/L in the distribution system and the time estimated to implement changes would be reduced to 12-24 months.

D. *Background and Purpose*

“Amendments to surface water treatment regulations regarding monitoring and reporting

The proposed amendments include new monitoring and reporting requirements to ensure compliance with existing treatment techniques regarding log inactivation and CT requirements. Log inactivation is a measure of the amount of viable microorganisms that are rendered nonviable during disinfection processes. CT is the product of residual disinfectant concentration (C) and disinfectant contact time (T). The CT value is used to determine the levels of inactivation under various operating conditions.

Public water systems using surface water or groundwater under the direct influence of surface water (GUDI) sources have long been required to meet log inactivation and CT requirements for the inactivation of *Giardia* cysts and viruses. These existing treatment technique requirements are intended to ensure that water systems provide adequate and continuous disinfection for the inactivation of pathogens.

The TAC Board recommended (by a vote of seven to six) that the monitoring requirements for CT calculations should be deleted and deferred to a future Chapter 109 revision because there are many variables for calculating CTs and the TAC believes this would be an additional burden for most systems. This recommendation was not incorporated into this proposed rulemaking because the only way to ensure compliance with the existing treatment techniques is to measure and record the data elements that are needed to calculate CTs (that is, disinfectant residual, temperature, pH, flow and volume) and report the results. In addition, water suppliers should already be monitoring these data elements because the data is needed to properly operate filtration

plants. Costs associated with the new reporting requirements should be minimal due to the availability of the EPA's CT calculator tool and the use of summary forms for reporting data for compliance purposes.”

CWA Response: CWA supports the TAC recommendation to defer the monitoring and reporting requirements for CT to a future Chapter 109 revision. Costs for small systems to calculate CT may be unreasonable. Many small systems do not have online instrumentation to monitor flow, pH, temperature or other pertinent parameters and the expense to add this instrumentation should be considered by the Board.

D. *Background and Purpose*

“Amendments to surface water treatment regulations regarding monitoring and reporting

...The proposed amendments also clarify the existing minimum residual disinfectant level at the entry point. By adding a zero to the minimum level (0.20 mg/L), water suppliers will be required to maintain a residual that is equal to or greater than 0.20 mg/L. Currently, levels of 0.15 mg/L or higher round up to 0.2 mg/L and are considered in compliance. A level of 0.20 mg/L is necessary due to the importance of meeting CTs and of maintaining an adequate disinfectant residual in the water entering the distribution system. Also, this level of sensitivity is consistent with existing requirements for the Groundwater Rule (0.40 mg/L) as specified in § 109.1302(a)(2) (relating to treatment technique requirements). Finally, this level of sensitivity is achievable using current online instrumentation for the measurement of disinfectant residuals.

The TAC recommended (by a vote of ten to three) that the residual remain at 0.2 mg/L because water systems using strip chart recorders may not be able to record data to two decimal places and water systems would be required to upgrade to more costly supervisory control and data acquisition systems. The Department estimates that 114 out of 352 plants (or ~ 30%) may be using strip chart recorders. Strip chart recorders can record measurements to two decimal places provided the proper scale and resolution is used. In cases when the requisite scale and resolution is not possible, an upgrade to electronic recording devices would cost approximately \$1,500. This cost should not be prohibitive for filter plants and the use of electronic devices offers several advantages. Advantages of using electronic recording devices include improved data reliability, faster and more comprehensive data analysis, better data resolution, elimination of the need for interpolating trace values from a chart, cost savings through the elimination of consumables (pens and chart paper) and reductions in errors associated with transferring analog data to a spreadsheet for recordkeeping or reporting purposes.”

CWA Response: CWA supports the TAC recommendation for the minimum entry point residual to remain at 0.2 mg/L instead of changing it to 0.20 mg/L. CWA disagrees with the DEP’s statement that “strip chart recorders can record to two decimal places...” Scale and resolution to two decimal places leaves chlorine residual left to subjective interpretation regarding the second decimal place. This could lead to erroneous and needless objectionable violations. Also, CWA request that the Board review the cost of implementing electronic recording devices. The DEP’s estimate of \$1500 is low and may only include the cost of the analyzer. Other costs such as installation, alarming/recording, and connection to a SCADA system are not included in the DEPs cost estimate.

D. Background and Purpose

“Amendments to disinfectant residual requirements in the distribution system

The proposed amendments are intended to strengthen the distribution system disinfectant residual requirements by increasing the minimum residual in the distribution system to 0.2 mg/L free or total chlorine. The Department's existing disinfectant residual requirements for distribution systems have not been substantially updated since 1992 and require the maintenance of a detectable residual that is defined as 0.02 mg/L. The Department's existing treatment technique is not protective of public health because a residual of 0.02 mg/L does not represent a true detectable residual and the level is inadequate to protect against microbial growth within the distribution system.”

CWA Response: CWA requests clarity on the term “true detectable residual” as this is not a term used analytically in the scientific community. Despite the confusion on the term, CWA agrees and supports changing the detectable residual from 0.02 mg/L to 0.1 mg/L based on scientific detection limit studies presented to TAC and within the Stakeholder meetings. CWA believes that increasing the minimum detectable residual is the single-most valid parameter that should be changed within the proposed rule. However, CWA does not support increasing the minimum distribution residual to 0.2 mg/L. See “Specific Comments to Section E. Summary of Regulatory Requirements” below.

D. Background and Purpose

“Why is it important to maintain a disinfectant residual within the distribution system?”

Maintenance of a disinfectant residual in the distribution system is:

- Required under the Federal Surface Water Treatment Rule for all systems using surface water and GUDI sources, and under Chapter 109 for all community water systems and those noncommunity water systems that have installed disinfection.
- Designated by the EPA as the best available technology for compliance with both the Total Coliform Rule (TCR) and the Revised TCR.
- Considered an important element in a multiple barrier strategy aimed at maintaining the integrity of the distribution system and protecting public health.
- Intended to maintain the integrity of the distribution system by inactivating microorganisms in the distribution system, indicating distribution system upset and controlling biofilm growth...Factors that influence pathogen survival and growth in the distribution system include water chemistry (temperature, pH, and the like), presence of nutrients, system hydraulics, sediment accumulation and presence (or absence) of disinfectant residual. Of these factors, maintenance of an adequate disinfectant residual throughout the distribution system plays a key role in controlling the growth of pathogens and biofilms and is a treatment technique that serves as one of the final barriers to protect public health. Lack of an adequate residual *may increase* the likelihood that disease-causing organisms such as *E. coli* and *Legionella* are present... There have been a total of 18 *Legionella*

outbreaks in this Commonwealth since 2010. The outbreaks occurred at several types of facilities, including personal care homes, apartment buildings, long-term care facilities, hotels, condominiums, correctional facilities, recreational parks and hospitals. The outbreaks resulted in 117 cases of illness, 71 hospitalizations and 8 deaths...”

CWA Response: CWA understands the importance of protecting public health. However, none of the outbreaks noted above were attributed to public water suppliers or water systems. The US CDC (August 2015) states, “The two most commonly identified deficiencies leading to drinking water-associated outbreaks were Legionella in building plumbing systems (66%) and untreated groundwater (13%). Legionella is not an issue that public water suppliers can control since it is a premise plumbing issue. The US CDC defines premise plumbing as “the drinking water system that is inside housing, schools, and other buildings.” Legionella cannot be controlled by distribution chlorine residuals, but should be managed by following appropriate guidelines for building maintenance. Please refer to presentation by Jeff Rosen at Stakeholder meeting on March 30, 2016 for additional information. In reference to the relationship between total coliform and *E. coli* presence and chlorine residual data, CWA data below shows that total coliform and *E. coli* are not directly correlated with chlorine residual.

CWA Total Coliform and E Coli Positive vs Chlorine Residuals from 2010-2015			
	# Total Coliform Positive	# <i>E. coli</i> Positive	Total Chlorine Residual (mg/L)
5/17/2010	1	0	2.4
6/10/2010	1	0	2.4
7/22/2010	1	0	1.8
8/4/2010	1	0	0.7
3/5/2012	1	0	1.9
3/14/2012	1	0	1.7
11/1/2012	1	1	2.4
12/17/2012	1	0	2.0
9/18/2013	1	0	0.1
10/1/2014	1	0	1.9
9/28/2015	1	0	1.9
10/5/2015	1	1	1.6

All Check Samples for all Positive Samples were Negative, No total coliform or *E. coli* positives were confirmed

This data shows that CWA had 12 Total Coliform positive distribution samples for full calendar years 2010-2015. Of those 12, only 1 positive total coliform sample was observed with a chlorine residual less than or equal to 0.1 mg/L. The other 11 samples had chlorine residuals ranging from 0.7 to 2.4 mg/L. Out of the 12 total coliform positive samples, 2 were also positive for *E. coli*. These *E. coli* positive samples had chlorine residuals ranging from 1.6 – 2.4 mg/L. Therefore, even samples with chlorine residuals averaging 10 times higher (2 mg/L) than DEP’s proposed 0.2 mg/L minimum residual, there are instances where total coliform and *E. coli* are positive. Also, it is important to note that follow-up or repeat testing at the original site and at 2 sites within +/- 5 service connections did not show the presence of total coliform or *E. coli*. CWA recommends that DEP perform a data analysis in conjunction with a number of representative public water suppliers in Pennsylvania to determine if this lack of direct correlation is observed throughout Pennsylvania. Low chlorine residual data, less than the proposed 0.2 mg/L, does not correlate with positive total coliform and *E. coli*

bacteria. Based on this data, CWA questions whether there will be a public health benefit to increasing the minimum residual to 0.2 mg/L.

In addition, the data in the following table shows the total number of samples collected for total coliform and chlorine residuals over a 6 year period for CWA. This data demonstrates the variability in chlorine residuals within a distribution system based on pumpage, systems demand, seasonal water temperatures, weather conditions etc. The distribution systems are dynamic and therefore, CWA and other water suppliers see variations through sampling data from year to year. Even with CWA data where the chlorine residual is less than the DEP proposed minimum residual of 0.2 mg/L, there is not a significant percentage of total coliform bacteria present. During the 6 year period shown below, the number of samples with less than 0.2 mg/L residual range from 5 to 81 samples, while the corresponding percentage of total coliform positive samples ranged from 0 - 0.28%. Comparing this data targeted at the proposed 0.2 mg/L residual with the data provided below for a 0.1 mg/L residual, CWA supports the TAC and Stakeholder recommendations to set the minimum distribution residual at 0.1 mg/L instead of the DEP's proposed 0.2 mg/L.

Chester Water Authority Compliance Chlorine Residuals (Number Less than Target Residual)								Number of Total Coliform and Chlorine Residual Samples	Percent of Total Coliform Positive Samples
year	<0.1	<0.2	<0.3	<0.5	AVG	MAX	MIN		
1	2	7	8	24	2.1	3.2	0.04	1451	0.14
2	3	6	9	20	2.0	3.0	0.02	1452	0.07
3	23	56	86	125	1.7	3.1	0.05	1554	0.06
4	37	81	116	167	1.5	3.1	0.03	1452	0.28
5	7	23	48	99	1.7	3.1	0.03	1453	0.00
6	1	5	22	61	1.8	3.1	0.07	1447	0.28

D. Background and Purpose

“Amendments to disinfectant residual requirements in the distribution system... what is a true detectable residual... To answer this question, several terms must first be defined. The Method Detection Limit (MDL) is a statistically derived qualitative value that is determined in the lab and provides a 99% confidence that the detected value in a given matrix is greater than zero. The MDL does not represent a quantitative value. The Method Limit (ML), also known as the practical quantitation limit, is the lowest achievable quantifiable limit at a 95% confidence level and is derived from the MDL. The MDL is multiplied by a factor to yield the ML. The ML is often rounded based on the precision and sensitivity of the method or the maximum contaminant level (MCL), or both.

According to Hach Company© (Primer, 2015), a leading manufacturer of chlorine residual monitoring devices, the MDL and ML used by the EPA to approve Hach's Free and Total Chlorine Residual Methods were 0.02 mg/L Cl and 0.1 mg/L Cl, respectively.

MDL = 0.024, rounded to 0.02 mg/L Cl

ML = MDL * 3.18

ML = 0.02 * 3.18

ML = 0.06 mg/L Cl, rounded to 0.1 mg/L Cl

In other words, the lowest achievable quantifiable limit is 0.1 mg/L.

In addition, all chlorine residual test methods are subject to interferences from inorganic and organic constituents such as iron, manganese, other oxidants and disinfection byproducts, and organic chloramines. These interferences can cause false positive results (Hach Company©, 2013).

Pressman and Wahman (2014 and 2015) reported that free chlorine and inorganic chloramines may react with dissolved organic nitrogen to form organic chloramines. Organic chloramines are problematic because they interfere with analytical methods and are poor disinfectants (that is, show little or no bactericidal activity). When total chlorine residuals are very low, between "detectable" and around 0.2 mg Cl₂/L, there may be little to no active disinfectant (that is, inorganic monochloramine) actually present.

The Colorado Department of Public Health and Environment (CDPHE) conducted a study to determine the detection limit for free chlorine using hand-held DPD devices in a field setting. The study included analyzing data from over 450 samples that were collected from 15 public water systems from across the state. The study findings showed a detection limit of 0.09 mg/L (99% confidence) (CDPHE, 2014).

Based on these studies and reports, and the prevalence of iron, manganese and other constituents of concern in raw and finished waters in this Commonwealth, the Department believes that the **true detectable residual is likely somewhere between 0.1—0.2 mg/L.**

The Board is seeking comments on additional studies and reports related to detection limits for free and total chlorine residual analysis in the field.”

CWA Response: CWA supports the detectable residual increase from 0.02 mg/L to 0.1 mg/L and request that the Board review the presentation from Chuck Hertz at the March 9, 2016 Stakeholder meeting and the previous presentation that Chuck gave at TAC. CWA understands that hypothetically there may be some instances where iron and manganese may interfere with chlorine residual analyses and result in false-positive chlorine residual data. However, neither HACH (during the PA AWWA Section Disinfection Forum in Fall 2015) nor the DEP has provided data to support the statement regarding interferences from iron or manganese nor have either HACH or DEP been able to answer the following questions:

- What chemical form or oxidation state must iron or manganese be present in order to create a false positive chlorine residual interference
- What concentration must the iron or manganese (in the appropriate oxidation state) be present to generate a false-positive chlorine residual interference

- What is the magnitude of the false-positive chlorine residual interference, given iron or manganese in the appropriate oxidation state and at the appropriate concentration
- What is the magnitude of the interference if iron or manganese is present in the appropriate oxidation state and at a concentration below the secondary MCLs (0.3 mg/L iron and 0.05 mg/L manganese)

CWA opposes the DEP's belief that a "**true detectable residual is likely somewhere between 0.1—0.2 mg/L.**" DEP does not present data specific to Pennsylvania to support such a statement. DEP's recommendation for a "true detectable residual" is unfounded and lacks peer reviewed studies based on sound science following appropriate EPA methods. CWA suggests that the Board recommend that there be a study in Pennsylvania with multiple public water suppliers and laboratories to scientifically determine the detectable residual in Pennsylvania based on sound science.

D. *Background and Purpose*

"What is an adequate residual for the control of microbial growth?"

A disinfectant residual serves as an indicator of distribution system contamination and the effectiveness of distribution system best management practices. Best management practices include flushing, storage tank maintenance, cross-connection control, leak detection, and effective pipe replacement and repair practices. The effective implementation of best management practices will help water suppliers comply with the disinfectant residual treatment technique by lowering chlorine demand and maintaining an adequate disinfectant residual throughout the distribution system. These same practices can also help control DBP formation.

The TAC recommended (by a vote of eight to five) that the minimum required disinfectant residual should be 0.1 mg/L (free or total). No supporting studies or reports were provided in support of a residual of 0.1 mg/L (free or total).

The Board requests comments including references to studies, reports or data that support a disinfectant residual of 0.1 mg/L or any other disinfectant residual that is equally protective of public health.

The TAC also recommended (by a vote of 12 to 0 with 1 abstention) that the Board retain the requirement for Heterotrophic Plate Count (HPC) monitoring. It was recommended that HPC should be kept as another tool to demonstrate compliance with the distribution system disinfectant residual requirements. No supporting studies or reports were provided to support that an HPC < 500 provides an equivalent level of public health protection when compared to a disinfectant residual of 0.2 mg/L.

The Board requests comments including references to studies, reports or data that provide supporting evidence that an HPC < 500 provides an equivalent level of public health protection when compared to a disinfectant residual of 0.2 mg/L."

CWA Response: CWA supports the TAC and Stakeholder group recommendations to set the minimum distribution residual to 0.1 mg/L instead of the proposed 0.2 mg/L and to retain HPCs as an alternative. CWA supports the Stakeholder workgroup recommendation because increasing the minimum disinfectant level in the distribution system from the existing 0.02 mg/L to 0.1 mg/L (for both free & total chlorine) is a 5-fold increase from the current level. A minimum value of 0.1 mg/L appears reasonable and the 0.2 mg/L does not provide any additional public health benefits, but a 0.2 mg/L residual does require significant additional capital improvement costs and operating costs.

D. Background and Purpose

“Costs

Disinfectant residuals in the distribution system

It is anticipated that the large majority of water systems will be able to comply with this requirement with little to no capital costs. According to Department records for the last 3 years (2012—2014):

- Based on more than 82,000 **monthly average** distribution system disinfectant residual values reported by 2,583 different water systems: 95.6% of the average values already meet or exceed the increased minimum residual of 0.2 mg/L (free chlorine); and only 4.4% of the average values are below the minimum residual.

- For the 37 systems that chloramine, based on more than 1,200 monthly average values reported: 99.67% of the average values already meet or exceed the increased minimum residual of 0.2 mg/L (total chlorine); and only 0.33% of the average values are below the minimum residual.

Systems may need to increase the frequency of or improve the effectiveness of existing operation and maintenance best management practices, such as flushing, storage tank maintenance, cross-connection control, leak detection, and effective pipe replacement and repair practices to lower chlorine demand and meet disinfectant residual requirements at all points in the distribution system.

Some systems with very large and extensive distribution systems may need to install automatic flushing systems or booster chlorination stations to achieve a 0.2 mg/L residual at all points in the distribution system. The estimates for these facilities are as follows: costs for automatic flushers: ~ \$2,000; and costs for booster chlorination stations: \$200,000—\$250,000.

The Department estimates that 20% of large systems (serving > 50,000), or six systems, may need to install automatic flushing devices or booster chlorination stations, or both. Three systems may need to install up to five automatic flushers for a cost of \$10,000 for each system, a total of \$30,000. Three systems may need to install a booster chlorination station at \$250,000 for each system, a total of \$750,000. The total capital costs to the regulated community may be **\$780,000**.

Costs for small systems are not expected to increase because most small systems are already maintaining adequate disinfectant residuals (0.40 mg/L) as required by the Groundwater Rule.

The Board requests comments on anticipated costs to comply with the proposed disinfectant residual requirements.

The Board is also seeking comments on whether a deferred effective date of 6 months after final promulgation is warranted to provide water systems with additional time to make any necessary operational changes. If capital improvements are needed, a system-specific compliance schedule may be needed. Comments on the anticipated length of time needed to increase disinfectant residuals and whether capital improvements are anticipated to meet the proposed requirements are requested.

CWA Response: CWA supports the Stakeholder workgroup comment in that “the compliance benefits as stated in the proposed rule are unfounded and the compliance costs are dramatically underestimated”.

The DEP has erroneously applied average monthly chlorine residual data for all Pennsylvania public water systems to conclude that the majority of public water systems already meet the proposed increased distribution residual of 0.2 mg/L in the distribution systems. The use of the average data to draw the conclusion that the majority of public water systems already meet the proposed 0.2 mg/L is inappropriate, flawed and overestimates the number of systems that already comply with this proposed requirement. Through the TAC and Stakeholder workgroup meetings and large water supplier meetings, the DEP was made aware of this overestimation; some water suppliers including CWA provided data to demonstrate the inaccuracy. CWA data is also shown in the tables above. The tables show that over a 6 year period, there were 5-81 instances where the distribution chlorine residual did not meet the proposed 0.2 mg/L residual; while CWA also shows that this number was reduced to 1-37 instances by reducing the minimum distribution residual to 0.1 mg/L. Reducing the minimum required residual to 0.1 mg/L reduces the number of instances by nearly 50% and this comes with reduced capital and operating costs. CWA suggest that the Board encourage DEP to reevaluate data to include all sample residual data instead of the average data. This data should be used to draw accurate compliance and cost assessments. Based on public water suppliers anticipated costs that were presented at TAC meetings, Large Water Supplier meetings and the Stakeholder meetings, and the demonstrated significant capital and operating expenses, CWA recommends that the provisions of the proposed rulemaking be deferred. CWA anticipates that public water suppliers will need 24 to 36 months to fully implement the capital and operating changes to increase the distribution residuals to 0.2 mg/L. However, CWA supports the TAC and Stakeholder workgroup recommendations to establish a minimum disinfection residual of 0.1 mg/L in the distribution system and the time estimated to implement changes would, therefore, be reduced to 12-24 months.

Specific Comments to Section E. Summary of Regulatory Requirements

1. § 109.301. General monitoring

“§ 109.301(1)(i)(C) Section 109.301(1)(i)(C) is proposed to be amended to clarify that a public water supplier shall record the number of periods each day when the residual disinfectant concentration at the entry point is less than 0.20 mg/L for more than 4 hours to be consistent with proposed language in § 109.202(c)(1)(ii)...”

§ 109.202(c)(1)(ii)(B) clarifies the minimum residual disinfectant level at the entry point. By adding a zero to the minimum level (0.20 mg/L), water suppliers will be required to maintain a residual that is equal to or greater than 0.20 mg/L. Currently, levels of 0.15 or higher round up to 0.2 and are in compliance.”

CWA Response: CWA understands the reasoning for the Department’s recommendation to “add a zero”; however, scientific, analytical methodology does not support setting the regulatory minimum to a number of significant digits that cannot be reinforced. The least significant figure in an analysis is always an “estimate” and therefore, the “zero” should not be added to the regulatory minimum. While this was done with the groundwater rule requirement (minimum 0.40), the second digit is still uncertain given the current field testing kits. CWA would also note that the field testing kits are used to calibrate on-line instrumentation. Scientific study and analysis in a scientific manner should be done to address the ability to regulate to the most significant figure; it should not be sufficient to “add a zero” without appropriate scientific peer reviewed studies.

2. “§ 109.301(1)(i)(D)(I) and (II) clarifies that public water suppliers shall monitor the residual disinfectant concentration at the same time and from the same location as total coliform samples, and shall ensure that the disinfectant residual is measured at least once per week. Disinfectant residual monitoring conducted at total coliform sample sites can be used to meet the weekly monitoring requirement. For any week that a total coliform sample is not collected, the water supplier shall measure the disinfectant residual at a representative location within the distribution system as per its sample siting plan. The TAC recommended (by a unanimous vote) that water suppliers be required to measure the distribution system disinfectant residual at least once per week, instead of once per day as initially proposed. This recommendation was incorporated into this proposed rulemaking.”

CWA Response: CWA understands the importance of monitoring throughout all distribution systems, however, the cost for small systems such as those that utilize circuit riders or commercial environmental accredited laboratories to perform such weekly monitoring should be considered by the Board. Weekly monitoring requirements represent a 4-fold increase in current monthly monitoring requirements for small systems.

3. *§ 109.710. Disinfectant residual in the distribution system*

“Section 109.710(a) and (b) is proposed to be amended to strengthen minimum distribution system disinfectant residual requirements for community water systems, nontransient noncommunity water systems with chemical disinfection and any transient noncommunity water system with filtration or 4-log treatment of viruses. These proposed amendments will assist water systems to maintain compliance with the requirement of § 109.4(2) (relating to general requirements) that treatment is adequate to protect the public health. Refer to Section D of this preamble for more information.

Existing § 109.710(c) is proposed to be renumbered as § 109.710(d).

Proposed § 109.710(c) clarifies that a treatment technique violation occurs when the minimum disinfectant residual is not maintained in the distribution system and defines the water system's obligation to respond to this situation. This section also retains the requirement for a water system to investigate the cause and corrective action whenever the minimum residual is not maintained. However, this investigation is only required if the minimum residual is not maintained at the same sample location in 2 consecutive months or more.

The TAC recommended (by a vote of eight to five) that compliance should be required 95% of the time. While this compliance requirement is reasonable for large water systems that collect more than 40 TCR samples per month, it may not be feasible to calculate a 95th percentile for smaller systems that only collect one or two samples per month. Instead of a 95% compliance determination for small systems, the proposed monitoring frequency was increased to four samples per month (one per week) with systems remaining in compliance if no more than one sample per month is below the limit.

The Board requests comments on the compliance determinations, especially for small systems.”

CWA Response: CWA supports the recommendation by TAC to determine compliance based on a 95% for large systems; however, CWA suggests that small systems be given an option to select compliance monitoring

based on a 75th percentile (weekly monitoring) or by choosing compliance based on a single monthly sample result. This would allow small systems to evaluate compliance option based on a cost-benefit perspective independent of other systems.

4. § 109.715. *Nitrification control plan*

Proposed § 109.715 (relating to nitrification control plan) requires a water system that uses chloramines as a disinfection process to develop and implement a nitrification control plan. This plan is instead of requiring a higher residual for systems that chloraminate to provide simultaneous control of microbes and nitrification. The TAC recommended (by a vote of eight to five) that nitrification control plans should be system-specific. This recommendation was incorporated into this proposed rulemaking.

CWA Response: CWA supports the recommendation by TAC to allow flexibility in system-specific nitrification control plans including parameters to be monitored.

CWA Overall Comments: Based on the information provided, CWA cannot and does not support the DEP's Proposed Disinfection Requirements Rule as published in The Pennsylvania Bulletin on February 20, 2016 due to lack of sufficient scientific data, lack of addressing a public health issue in Pennsylvania, the inability to eradicate or control *Legionella* in premise plumbing by increasing the distribution residuals to 0.2 mg/L, lack of supporting realistic cost-benefit analyses, failure of the DEP to obtain the appropriate residual data from representative Pennsylvania Public Water Systems to allow the DEP to accurately assess compliance risks, and lack of a scientifically sound study to accurately identify and quantify the potential for simultaneous compliance risks (e.g. chlorine residual vs DBPs) for Pennsylvania Public Water Systems. The impact of the increase in chlorine residuals as proposed should be assessed to evaluate the changes with DBPs that may occur.

CWA provided simultaneous compliance risks associated with increasing chlorine residuals and associated increases in Disinfection Byproducts (DBPs) at the May 15, 2015 TAC meeting. Given the reduction to a proposed 0.2 mg/L minimum distribution residual, CWA reevaluated the modeling and now estimates that the TTHMs will increase from 15-20% throughout the system and the HAA5s will increase from 50-80% throughout the system. CWA requests that the Board consider the simultaneous compliance risks and issues that may result across the State given the DEP's proposed increase in distribution chlorine residuals.

CWA trusts that increasing the minimum detectable residual is the single-most valid, scientifically-supported parameter that should be changed within the proposed rule. However, CWA does support the TAC and Stakeholder workgroup recommendations in full.

CWA appreciates the opportunity to provide comments.

