Notice of Proposed Rulemaking
Department of Environmental Protection
Environmental Quality Board
(25 Pa. Code, Chapter 109)
(Safe Drinking Water)
Long Term 2 Enhanced Surface Water Treatment Rule

Preamble

The Environmental Quality Board (Board) proposes to amend 25 *Pa. Code*, Chapter 109 (relating to safe drinking water). The amendments pertain to public water systems (PWSs) supplied by a surface water source and public water systems supplied by a ground water source under the direct influence of surface water. The Long Term 2 Enhanced Surface Water Treatment Rule (LT2) will further protect public health against Cryptosporidium and other microbial pathogens in drinking water. These amendments will supplement existing microbial treatment regulations and targets PWSs with higher potential risk from Cryptosporidium. Cryptosporidium is a particular concern because it is highly resistant to chlorine and has been identified as the cause of a number of waterborne disease outbreaks in the United States. EPA has concluded that existing treatment requirements do not provide adequate public health protection in filtered PWSs with the highest source water Cryptosporidium levels. Consequently, these amendments will require PWSs to monitor their source water to determine an average Cryptosporidium level that will be used to establish the degree of additional treatment, if any, the filtered PWS must provide. Additional Cryptosporidium treatment must be achieved by using one or more treatment or control processes form a microbial toolbox of options, and systems must report that these toolbox options are adequately maintained.

This proposal was adopted by the Board at its meeting of _____.

A. Effective Date

These amendments will go into effect upon publication in the *Pennsylvania Bulletin* as final rulemaking.

B. Contact Persons

For further information contact Barry Greenawald, Chief , Division of Operations Monitoring and Training, P.O. Box 8467, Rachel Carson State Office Building, Harrisburg, PA 17105-8467, (717) 772-4018, or Marylou Barton, Assistant Counsel, Bureau of Regulatory Counsel, P.O. Box 8464, Rachel Carson State Office Building, Harrisburg, PA 17105-8464, (717) 787-7060. Information regarding submitting comments on this proposal appears in Section J of this preamble. Persons with a disability may use the AT&T Relay Service by calling 1-800-654-5984 (TDD users) or 1-800-654-5988 (voice users). This proposal is available electronically through the DEP Web site (http://www.dep.state.pa.us).

C. Statutory Authority

The final rulemaking is being made under the authority of section 4 of the Pennsylvania Safe Drinking Water Act (35 P. S. § 721.4), which grants the Board the authority to adopt rules

and regulations governing the provision of drinking water to the public, and sections 1917-A and 1920-A of The Administrative Code of 1929 (71 P. S. §§ 510-7 and 510-20).

D. Background and Purpose

These draft proposed amendments apply to public water systems (PWSs) supplied by a surface water source and public water systems supplied by a ground water source under the direct influence of surface water (GUDI). Approximately 355 PWSs filter surface or GUDI sources to provide drinking water to about 8.4 million commonwealth citizens and thousands of visitors. Surface and GUDI sources have been shown to contain Cryptosporidium and other pathogens which pose a public health risk. Cryptosporidium is a particular concern targeted by the LT2 because it is has been identified as the cause of a number of waterborne disease outbreaks in the United States.

Cryptosporidium is a common protozoan in the environment. Sources of *Cryptosporidium* oocysts include agricultural runoff and wastewater discharges. If a water system's treatment processes do not efficiently remove Cryptosporidium, oocysts may enter finished water at levels that pose health risks. Unlike other pathogens (disease-causing organisms) such as viruses and bacteria, *Cryptosporidium* oocysts are resistant to inactivation using standard disinfection practices, such as Chlorine. Therefore, the successful control of *Cryptosporidium* is dependent on physical removal processes, such as filtration, utilized by PWSs.

In humans, *Cryptosporidium* may cause a severe gastrointestinal infection, termed cryptosporidiosis, which can last several weeks. Cryptosporidiosis usually causes 7 to 14 days of diarrhea, a low-grade fever, nausea and abdominal cramps in individuals with healthy immune systems. There is currently no therapeutic cure for cryptosporidiosis, but the disease is self-limiting in healthy individuals. It does, however, pose serious health and mortality risks for sensitive subpopulations including children, the elderly, pregnant women, organ transplant recipients and persons with weakened immune systems, almost 20% of the population in the United States.

EPA has concluded that existing treatment requirements do not provide adequate public health protection in filtered PWSs with the highest source water Cryptosporidium levels. The LT2 rule increases public health protection from Cryptosporidium by establishing a method to identify and adequately treat surface and GUDI sources with elevated levels of Cryptosporidium. More specifically, the rule requires the following.

PWSs must monitor their source water (the influent water entering the treatment plant) to determine an average Cryptosporidium level. More specifically, large systems must monitor for Cryptosporidium, E.coli, and turbidity at least once per month for 24 consecutive months. Small systems may initially monitor just for E.coli as a screening analysis and are required to monitor for Cryptosporidium only if their E. coli levels exceed specified “trigger” values. Small PWS’s that exceed the E. coli trigger will be required to monitor for Cryptosporidium.

Applicable PWSs will be classified in one of four treatment categories (or “bins”) based on the results of the source water Cryptosporidium monitoring described in the previous section. The higher the Cryptosporidium oocyst concentration of the source water, the higher the bin classification. This bin classification determines the degree of additional Cryptosporidium

treatment, if any, the filtered PWS must provide above and beyond existing treatment requirements, all of which remain in effect under this amendment. EPA suspects that the majority of filtered PWSs will be classified in Bin 1, which carries no additional treatment requirements. PWSs classified in Bins 2, 3, or 4 must achieve 1.0-log to 2.5-log of treatment (90-99.7 percent reduction) for Cryptosporidium over and above that provided by existing conventional treatment.

Filtered PWSs must meet the additional Cryptosporidium treatment required in Bins 2, 3, or 4 by using treatment or control processes from a "microbial toolbox of options. The microbial toolbox provides feasible treatment options specifically targeted at Cryptosporidium and establishes operational and design standards for each option. The toolbox options include standards for Cryptosporidium inactivation and removal processes, which were researched and developed by EPA and are published for the first time in this proposed regulation. More specifically, standards for Cryptosporidium inactivation by ozone, chlorine dioxide, and UV light are established. Standards established for processes that physically remove Cryptosporidium contamination include membranes, bag filters, cartridge filters, pre-sedimentation basins, and riverbank filtration. The development of these standards overcomes an existing significant limitation by providing specific strategies to comply with additional Cryptsporidium treatment.

EPA believes that implementation of the LT2 will significantly reduce levels of infectious Cryptosporidium in finished drinking water. In addition, the treatment technique requirements of this regulation will increase protection against other microbial contaminants by improving overall filter plant treatment. Considering that approximately 355 PWSs would be impacted by this regulation, it is in the best interest of this Commonwealth's public health protection and economic development goals to incorporate the LT2 into Chapter 109.

The Draft Proposed LT2 amendments were presented to the Small Systems Technical Assistance Center Advisory Board (TAC Board) on November 13, 2007. On December 12, 2007, the TAC Board provided a letter supporting the draft proposed regulations, and included written comments (please see attached letter for details). The most noteworthy comments included: upfront clarification of applicability to surface and GUDI, support of additional Department language on EPA research, need to add definition of "bin", consistent methodology for Challenge testing, value of adding Microbial Toolbox Summary and Reporting Requirements as Appendices to Chapter 109, and acceptance of validation testing requirements. All LT2 specific comments were thoroughly considered and the majority of them were addressed and/or incorporated into the current version of the draft proposed regulations.

E. <u>Summary of Regulatory Requirements</u>

The proposed amendments are based on federal Long Term 2 Enhanced Surface Water Treatment Rule requirements. The majority of the amendments directly reflect and are no more stringent than federal regulatory language. Specific differences, including more stringent language will be outlined below.

Additions to existing Chapter 109 language follow:

§ 109.1. Definitions.

The Department has added definitions for the following terms in 109.1: *Bag filter, Bank filtration, Bin, Cartridge filter, Flowing stream, Lake/reservoir, Membrane filtration, Plant intake, Presedimentation, Significant deficiency, and 2-stage lime softening*. These terms are vital to the clear interpretation of the LT2 and had not been previously defined in Chapter 109.

Additionally, the following text was added to the existing definition of *Conventional filtration, "any treatment train that includes coagulation/flocculation, clarification, and granular media filtration is regarded as conventional. The clarification step must be a solid/liquid separation process where accumulated solids are removed during this separate component of the treatment system.* This text was incorporated because it provides valuable clarification to help ensure consistent statewide implementation and application of the existing definition. This additional text is consistent with EPA language provided in the preamble of the LT2 regulation. Via a memo and verbal discussion, EPA Headquarters indicated this language should be used to clarify any confusion when implementing regulations and applying the Conventional classification.

§ 109.202.

Alerts GUDI sources that they must monitor source water for Cryptosporidium.

§ 109.204. Disinfection profiling and benchmarking.

Updates an existing incorporation of federal requirements by reference.

§ 109.304. Analytical requirements.

Alerts systems that they must use an approved laboratory to analyze Cryptosporidium samples.

§ 109.417. Special notice for failure to conduct source water Cryptosporidium monitoring or failure to determine bin classification.

Incorporates federal language regarding required public notification for failure to adequately conduct all necessary source water monitoring.

§ 109.705. Sanitary surveys.

Incorporates federal language which outlines the requirements of a system for responding to and correcting significant deficiencies identified in a sanitary survey report.

§ 109.1002. MCLs, MRDLs or treatment techniques.

Alerts bottled water and vended water systems to the treatment technique requirements (additional treatment for elevated Cryptosporidium source water levels) of the LT2. These would only apply in the rare circumstance where a bottled or vended system utilizes surface or GUDI as a source.

§ 109.1003. Monitoring requirements.

Alerts bottled water and vended water systems to the source water monitoring requirements of the LT2. These would only apply in the rare circumstance where a bottled or vended system utilizes surface or GUDI as a source.

New language added to Chapter 109 via Subchapter L. Long Term 2 Enhanced Surface Water Treatment Rule follow:

§ 109.1201. Scope.

These draft proposed amendments apply to public water systems (PWSs) supplied by a surface water source and public water systems supplied by a ground water source under the direct influence of surface water. Approximately 355 PWSs, serving about 8.4 million citizens will be impacted by the proposed amendments. Compliance dates will be determined following four schedules based on population served by the PWS.

Language in this section is identical to federal language.

§ 109.1202. Monitoring requirements.

These amendments require applicable public water systems to monitor their source water (the influent water entering the treatment plant) to determine an average Cryptosporidium level. More specifically, schedule 1-3 systems must monitor for Cryptosporidium, E.coli, and turbidity at least once per month for 24 consecutive months. Schedule 4 systems may initially monitor just for E.coli as a screening analysis and are required to monitor for Cryptosporidium only if their E. coli levels exceed specified "trigger" values. Schedule 4 PWS's that exceed the E. coli trigger must monitor for Cryptosporidium for either 12 consecutive months (2 samples per month) or 24 consecutive months (one sample per month). Provisions are included which may allow seasonal sources to conduct less overall monitoring, a total of 12 samples evenly spaced within the season of operation. Sampling start dates are staggered with the largest systems monitoring first and the smallest last. This allows small systems more time to prepare and budget for the sampling. It also helps prevent overwhelming demand on the analytical laboratories.

Language in this section is identical to federal language with the following exceptions, identified by italics:

§ 109.1202(a)(5) For filtered systems serving fewer than 10,000 people, the Department may approve monitoring for an indicator other than E. coli under paragraph (a)(3) . The Department also may approve an alternative to the E. coli concentration in subparagraph (a)(4)(i), (ii) or (iv) to trigger Cryptosporidium monitoring. The Department added the following language "*This approval by the Department would be based on EPA-supported research indicating the validity of an alternative to E. coli.*"

The italicized language is necessary because the decision to approve an alternative to E.coli should be based on substantial national research.

§ 109.1202(f) New sources.

(1) A system that *intends* to use a new source of surface water or GUDI after the system is required to begin monitoring under subsection (c) shall monitor the new source on a schedule the Department approves. *Any source that has not been monitored according to the requirements of this subchapter will be considered to be a new source. Source water monitoring for new sources must meet the requirements of this subchapter. The system shall also meet the bin classification and Cryptosporidium treatment requirements of § 109.1203(a)-(j), as applicable, for the new source on a schedule approved by the Department. Sources that have not been monitored according to the requirements of this subchapter will be considered to be Bin 4 until monitoring is adequately completed. No later than the applicable Cryptosporidium compliance dates specified in § 109.1203(k), systems wishing to use sources that have not been monitored shall meet the Bin 4 treatment requirements of § 109.1203 (a)-(j) unless otherwise indicated by the Department.*

§ 109.1202(p) Multiple sources.

Systems with plants that use multiple water sources, including multiple surface water sources and blended surface water and ground water sources, shall collect samples as specified in paragraph (e)(1) or (2) . The use of multiple sources during monitoring must be consistent with routine operational practice. *Sources not adequately evaluated during the monitoring period will be considered new sources and the requirements under § 109.1202(f) (relating to new sources) will apply. Systems may begin monitoring a new source as soon as a sampling schedule and plan has been approved by the Department.*

Additional italicized language was added to the above sections (p) and (f) to clarify the meaning of "new sources". This language was created in response to ongoing confusion from systems already conducting the sampling on their sources and comments from the TAC board. This addition was necessary because EPA failed to address the issue of exactly what a "new source" was, creating the potential for confusion and lack of necessary monitoring on numerous sources. More importantly EPA failed to address how multiple sources, not utilized during the initial round of sampling, would be dealt with. EPA assumed systems would only utilize one source. The vast majority of Pa's filter plants have more than one source. The Department has chosen to designate any sources not evaluated during the initial round of sampling as a new source. This enables PA to establish a reasonable schedule for the monitoring of these sources, allowing systems time to budget for and conduct the monitoring. This approach also assures public health is adequately protected and unmonitored sources are not utilized without proper treatment. Language in this section was created to fill a void in Federal language, it does not specifically alter existing federal language in a more stringent fashion. In developing this language, the Department worked with the Association of State Drinking Water Administrators (ASDWA) to setup national conference calls with other state regulatory agencies. The Department's approach is consistent with the national consensus approach, presented to EPA Head Quarters via an ASDWA memo.

§ 109.1203 Bin classification and treatment technique requirements.

Applicable PWSs will be classified in one of four treatment categories (or "bins") based on the results of the source water Cryptosporidium monitoring described in the previous section. The higher the Cryptosporidium oocyst concentration of the source water, the higher the bin classification. This bin classification determines the degree of additional Cryptosporidium treatment, if any, the filtered PWS must provide above and beyond existing treatment requirements, all of which remain in effect under this amendment. EPA suspects that the

majority of filtered PWSs will be classified in Bin 1, which carries no additional treatment requirements. PWSs classified in Bins 2, 3, or 4 must achieve 1.0-log to 2.5-log of treatment (90-99.7 percent reduction) for Cryptosporidium over and above that provided by existing conventional treatment. Ultimately, this additional treatment establishes a new treatment technique requirement for filter plants whose source water is bin 2 or greater. As with monitoring, Bin determination and compliance dates are staggered with large systems being impacted first and small systems last.

Language in this section is similar to federal language with the following exceptions, identified by italics:

§109.1203(e) Filtered system additional Cryptosporidium treatment requirements.

Filtered systems shall provide the level of additional treatment for Cryptosporidium specified in this subsection based on their bin classification as determined under § 109.1203 (a)-(c) and according to the schedule in § 109.1203(k)-(o). (1) If the system bin classification is bin 1 *and the system is in full compliance with applicable treatment technique requirements under § 109.202(c)*, the system shall provide additional Cryptosporidium treatment requirements as follows:

The above italicized language was added for all system types in 109.1203 (e). The Department felt it was necessary to clarify the intent of the federal regulation – provide additional treatment beyond that already required. Incorporating a Chapter 109-specific reference to existing regulatory requirements should help prevent confusion on the part of the regulated community.

§ 109.1203 (m)(5) *On a case by case basis within an agreed upon timeframe,* the Departments may allow up to an additional 2 years for complying with the treatment requirement for systems making capital improvements.

The above italicized language was added based on comments from the TAC board that this would help provide clarification and prevent confusion.

Throughout the federal LT2 rule, specific language was incorporated to provide a compliance approach for unfiltered systems. As per existing Chapter 109 requirements, PA does not allow unfiltered systems. However, a small number of systems have sources which were thought to be ground water; therefore, these sources had been used in an unfiltered status. It was recently determined that some of these well sources are actually under the influence of surface water or GUDI. Unfiltered language was incorporated into the state LT2 regulation to address these sources. However, the unfiltered source testing requirements and bin determination are essentially identical to the filtered source testing requirements. This language is more stringent than federal language; but, necessary in order to be consistent with existing Chapter 109 language. Most importantly, it is necessary to assure that public health and safety is adequately protected by the addition of proper filtration on unfiltered surface and GUDI sources.

§ 109.1204 Requirements for microbial toolbox components.

Filtered PWSs must meet the additional Cryptosporidium treatment required in Bins 2, 3, or 4 by using treatment or control processes from a "microbial toolbox of options. The microbial toolbox provides feasible treatment options specifically targeted at Cryptosporidium and establishes operational and design standards for each option. The toolbox options include standards for Cryptosporidium inactivation and removal processes, which were researched and developed by EPA and are published for the first time in this proposed regulation. More specifically, standards for Cryptosporidium inactivation by ozone, chlorine dioxide, and UV light are established. Standards established for processes that physically remove Cryptosporidium contamination include membranes, bag filters, cartridge filters, pre-sedimentation basins, and riverbank filtration. The development of these standards overcomes an existing significant limitation by providing specific strategies to comply with additional Cryptsporidium treatment.

Language in this section is identical to federal language with the following exceptions, identified by italics:

§ 109.1204 (b) Watershed control program. Systems receive 0.5-log Cryptosporidium treatment credit for implementing a watershed control program that meets the requirements. *This credit may not be used to maintain the additional log removal credits specified in § 109.1203 (relating to bin classification and treatment technique requirements). This credit may only be applied in addition to the toolbox options used to meet the minimum log removal and may apply in lieu of a toolbox option for which credit has been temporarily revoked.*

The above italicized text is more stringent than federal language. It is necessary to avoid imposition of treatment technique violations upon water systems due to events which they have no control over. The watershed control program (WCP) option is different than other toolbox options in that it relates to efforts undertaken outside of the filter plant operations to reduce Cryptosporidium loading entering the filter plant. Additionally, this option focuses on source water protection, as opposed to in-plant treatment and monthly reporting. The Department anticipates that in a scenario where a spill or other contamination of the source water was to occur upstream of the filter plant intake, the WCP credit could be revoked. If systems rely on this credit to maintain the minimum Cryptosporidium log removal credit, a treatment technique violation would be incurred by the water system through no action of their own. The italicized language encourages source water protection and allows systems to pursue this valuable toolbox option, while preventing situations where systems rely on this option to maintain a monthly treatment technique; avoiding the previously mentioned scenario. The Department anticipates that systems will wish to pursue additional log removal treatment beyond the minimum required by their bin classification (bin 2 and greater). It would be wise for systems to do this in order to provide a margin of safety regarding the removal of Cryptosporidium. The italicized language is consistent with this thinking.

§ 109.1205 Reporting and record keeping requirements.

PWSs impacted by these proposed amendments must report source water monitoring results and bin determination. PWSs which fall into Bin 2, 3, or 4 must report which toolbox options are used to meet these requirements. Additionally these systems must report monthly that the selected toolbox options are being adequately maintained within specified operating standards.

Language in this section is identical to federal language with the following exceptions, identified by italics:

§ 109.1205 (o) Chlorine dioxide. Systems are eligible to receive the Cryptosporidium treatment credit listed in Table 1. CT Values (mg min/L) for Cryptosporidium Inactivation by Chlorine Dioxide, contained in Appendix A to Subpart L, by meeting the corresponding chlorine dioxide CT value for the applicable water temperature, as described in subsection (n).

(1) The Department may approve alternative chlorine dioxide CT values to those listed in subsection (o) on a site-specific basis.

(2)The Department will base this approval on a site-specific study a system conducts that follows a Department-approved protocol.

The Department chose to remove the above italicized text from the regulation. The CT values published in the federal regulation are based on extensive research and are the minimum dosages necessary to assure proper operation of this treatment process. In order to assure consistent application of this technology on a level that is protective of public health and safety, the Department felt it was best to remove the text allowing site-specific deviations.

§ 109.1205 (p) Ozone. Systems receive the Cryptosporidium treatment credit listed in Table 2 CT Values (mg min/L) for Cryptosporidium Inactivation by Ozone, contained in Appendix A to Subpart L, by meeting the corresponding ozone CT values for the applicable water temperature, as described in subsection (n)

(*1) The Department may approve alternative Ozone CT values to those listed in subsection (p) on a site-specific basis.*

(2)The Department will base this approval on a site-specific study a system conducts that follows a Department-approved protocol.

The Department chose to remove the above italicized text from the regulation. The CT values published in the federal regulation are based on extensive research and are the minimum dosages necessary to assure proper operation of this treatment process. In order to assure consistent application of this technology on a level that is protective of public health and safety, the Department felt it was best to remove the text allowing site-specific deviations.

§ 109.1205 q(2)iii The Department may accept alternative validation testing approaches, *if these approaches are first approved by EPA.*

The Department chose to add the above italicized text in order to assure adequate research is conducted on a particular UV treatment unit prior to validation and approval. This is necessary to assure proper operation of this treatment process and national standards are consistently upheld. In order to assure consistent application of this technology on a level that is protective of public health and safety, the Department felt it was best to work closely with EPA and other state regulators to develop alternative validation testing approaches. This should help prevent systems from incurring additional costs necessary to validate an already properly-validated treatment unit.

§ 109.1205 (i)

(i) Microbial toolbox reporting requirements. Microbial toolbox reporting requirements, established by the EPA under the National Primary Drinking Water regulations in 40 CFR 141.721(f) are incorporated by reference except as otherwise established by this chapter. Systems are required to report items specified § 109.1204 for all toolbox components for which they are requesting treatment credit, as outlined in appendix to subpart L. *Alternatively, the State may approve a system to certify operation within required parameters for treatment credit rather than reporting monthly operational data for toolbox options.*

The Department deleted the above italicized text because it is contradictory to other LT2 regulatory language, which outlines detailed reporting requirements; and the overall intent of the regulation, to assure increased treatment is maintained on sources with elevated Cryptosporidium. It is critical that systems using sources with elevated Cryptosporidium levels, adequately and vigilantly maintain this additional treatment. In order to assure adequate protection of public health and safety, monthly reporting is necessary. EPA has established no other mechanism to assure proper operation without such reporting. Therefore, this alternative would result in state and national inconsistencies regarding treatment requirements. Systems required to conduct this reporting, would be doing such to assure compliance with a more stringent treatment technique for the removal of Cryptosporidium, shown to be an acute public health risk. Monthly reporting for treatment technique compliance has always been the minimum requirement for previous treatment techniques. Therefore, it is a reasonable expectation to maintain this requirement as a mechanism to assure adequate Cryptosporidium treatment remains in place.

The Draft Proposed LT2 amendments were presented to the Small Systems Technical Assistance Center Advisory Board (TAC Board) on November 13, 2007. On December 12, 2007 a supporting letter with comments was provided. Following the public comment period on the proposed regulations, another briefing will occur at a future TAC meeting. The proposed LT2 provisions will be published in the ??/?? *Pennsylvania Bulletin* with a 30-day public comment period. No public meetings are anticipated.

F. Benefits, Costs and Compliance

Benefits

The LT2 rule will further protect public health against Cryptosporidium and other microbial pathogens in drinking water supplied to approximately 8.4 million commonwealth citizens and thousands of out of state visitors. These amendments will supplement existing microbial treatment regulations and targets PWSs with higher potential risk from Cryptosporidium. Cryptosporidium is a particular concern because it is highly resistant to chlorine and has been identified as the cause of a number of waterborne disease outbreaks in the United States. EPA has concluded that existing treatment requirements do not provide adequate public health protection in filtered PWSs with the highest source water Cryptosporidium levels. Consequently, these amendments will require PWSs to monitor their source water to determine an average Cryptosporidium level that will be used to establish the degree of additional treatment, if any, the filtered PWS must provide.

Additional Cryptosporidium treatment is expected to result in a reduced rate of Cryptosporidium-related illnesses and death. EPA estimates that after full implementation of the LT2 rule, on average, the nation is expected to avoid 89,375 to 1,459,126 illnesses and 20 to 314 deaths annually.

Furthermore, EPA estimates the annual present value of the mean benefit of LT2 rule implementation ranges from $177 million to $2.8 billion, depending on the rate of Cryptosporidium occurrence.

Projecting the distribution of illnesses and deaths from Cryptosporidium within the state of PA is extremely difficult; however, the best available potential estimate would be a $4.48 million to $70.84 million annual benefit depending on the rate of Cryptosporidium occurrence.

Compliance Costs

The LT2 rule applies to PWSs supplied by surface water source and public water systems supplied by a ground water source under the direct influence of surface water (GUDI). Approximately 355 PWSs treat surface or GUDI sources to ultimately provide drinking water to about 8.4 million commonwealth citizens and thousands of out-of-State visitors. All 355 PWSs will be affected by this rule to varying degrees. According to EPA, the overall mean annualized LT2 cost impacts to PWSs are estimated to range from approximately $93 to $133 million. This range in mean cost estimates is associated with the different Cryptosporidium occurrence data sets. In PA, this tranlates to $2,352,900 to $3,364,900.

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More specifically, PWSs will incur monitoring costs to assess source water Cryptosporidium levels, though monitoring requirements vary by PWS size (large vs. small). Source water monitoring costs are structured on a per-plant basis. There are three types of monitoring that plants may be required to conduct turbidity, E. coli, and Cryptosporidium. Source water turbidity is a common water quality parameter used for plant operational control. Also, to meet Surface Water Treatment Rule (SWTR), Long Term 1 Enhanced Surface Water Treatment Rule (LT1ESWTR), and Interim Enhnaced Surface Water Treatment Rule (IESWTR) requirements, most PWSs have turbidity analytical equipment in-house and operators are experienced with turbidity measurement. Thus, EPA assumes that the incremental turbidity monitoring burden associated with the LT2 is negligible.

Estimates of laboratory fees, shipping costs, labor hours for sample collection, and hours for reporting results were used to predict PWS costs for initial source water monitoring under the LT2. National monitoring costs for initial monitoring range from $45 million to $59 million depending on the occurrence data set and discount rate. In PA, monitoring cost estimates range from $1.14 million to $1.49 million.

Filtered plants in small PWSs initially will be required to conduct 1 year of biweekly E. coli source water monitoring. These plants will be required to monitor for Cryptosporidium if E. coli levels exceed 10 E. coli/100 mL for lakes and reservoir sources or 50 E. coli/100 mL for flowing stream sources. EPA estimated the percent of small plants that would be triggered into Cryptosporidium monitoring as being equal to the percent of large plants that would fall into any bin requiring additional treatment. EPA Survey data indicate that approximately 75 to 80 percent of small PWSs will not exceed the E. coli trigger values and, consequently, will not be required to monitor for Cryptosporidium. E. coli ($25/sample) is far less costly to analyze than

Cryptosporidium $500/sample; therefore, this approach will significantly reduce the burden for small PWSs. In Pa, 260 small systems (serve < 10,000 customers) are afffected by LT2. If EPA estimates are true, 195 small systems will avoid cryptosporidium sampling costs, needing to spend $650 per system to sample. This equates to a total cost savings 12,000 per small system or $2.46 million total. Conversley 65 small systems may be required to incur the full sampling cost of $12,650 per system.

All PWSs that conducted initial monitoring were assumed to conduct the second round of monitoring, except for those PWSs that installed treatment that achieves a total of 5.5-log or greater treatment for Cryptosporidium as a result of the rule. These PWSs are exempt from monitoring under the LT2. EPA estimates that the cost of the second round of source water monitoring will range from $21 million to $36 million, depending on the occurrence data set and discount rate used in the estimate. In PA, this translates to approximately $531,130 to $910,800 cost for the second round of monitoring.

Some PWSs (10% estimate) will incur costs for additional Cryptosporidium treatment, where required. EPA was unable to provide specific cost estimates for additional treatment, due to the variety of options available. In PA, it is estimated that 35 systems may need to provide additional treatment. It is expected that most of these systems will take advantage of the option of optimizing filter plant turbidity to 0.15 NTU (50% lower than current regulatory requirements). Due to ongoing optimization assistance efforts, PA filter plants are well positioned to meet these lower requirements. Optimizing filter plant turbidities is an operational technique, much less costly than installation of additional treatment.

EPA estimates that States (including primacy agencies) will incur an annualized cost of $1.1 to 1.4 million. In PA, this translates to $27,830 to $35,420.

EPA estimates that all households served by surface and GUDI sources will face some increase in household costs due to implementation of the LT2. Over 95 percent of all households are estimated to face an annual cost increase of less than $12. Households served by small PWSs that install advanced technologies will face the greatest increases in annual costs. Approximately 8.4 million commonwealth citizens and thousands of visitors receive drinking water from filter plants affected by LT2.

Compliance Assistance Plan

The Department's Safe Drinking Water Program utilizes the Commonwealth's PENNVEST Program in order to offer financial assistance to eligible public water systems. This assistance is in the form of a low-interest loan, with some augmenting grant funds for hardship cases. Eligibility is based upon factors such as public health impact, compliance necessity and project/operational affordability.

In addition, the Department has instituted a number of assistance programs, including the highly successful and nationally recognized Filter Plant Performance Evaluation Program. More recently, the Department contracted with the Pennsylvania Section American Water Works Association under the Partnership for Safe Water Program (Partnership). The Partnership promotes and supports filtered surface water suppliers who are committed to going beyond compliance. The Department is a leading participant in the EPA Area Wide Optimization Program (AWOP). This National program provides compliance assistance tools, which state

regulatory agencies can share with water suppliers. The Department has been utilizing a data collection and analysis tool – Optimization Assessment Software (OAS) – for approximately 3 years. Utilizing the OAS software will help systems prepare to take advantage of the optimized turbidity toolbox options of the LT2 regulation.

Finally, the Bureau of Water Standards and Facility Regulation has a section dedicated to providing both training and outreach support services to public water system operators. As a result of the Department's efforts outlined above, this Commonwealth's public water suppliers are well positioned to manage the risk and meet the more rigorous public health protection measures included in the LT2.

Paperwork Requirements

The amendments will require monitoring and reporting of source water Cryptosporidium levels. A small number of water systems, those with elevated source water Cryptosporidium, will need to report monthly that they are maintaining additional treatment. Modifying the existing data reporting forms, possibly creating a new form, should easily facilitate this additional monitoring and reporting. In effect, little additional paperwork will be necessary.

G. Pollution Prevention (if applicable)

The Federal Pollution Prevention Act of 1990 established a national policy that promotes pollution prevention as the preferred means for achieving state environmental protection goals. DEP encourages pollution prevention, which is the reduction or elimination of pollution at its source, through the substitution of environmentally-friendly materials, more efficient use of raw materials, and the incorporation of energy efficiency strategies. Pollution prevention practices can provide greater environmental protection with greater efficiency because they can result in significant cost savings to facilities that permanently achieve or move beyond compliance. This regulation has incorporated the following pollution prevention incentives:

Not applicable.

H. Sunset Review

This regulation will be reviewed in accordance with the sunset review schedule published by the Department to determine whether the regulation effectively fulfills the goals for which it was intended.

I. Regulatory Review

Under Section 5(a) of the Regulatory Review Act (71 P.S. § 745.5(a)), on _____, the Department submitted a copy of these proposed amendments to the Independent Regulatory Review Commission (IRRC) and the Chairpersons of the House and Senate Environmental Resources and Energy Committees. In addition to submitting the proposed amendments, the Department has provided IRRC and the Committees with a copy of a detailed regulatory analysis form prepared by the Department. A copy of this material is available to the public upon request.

Under section 5(g) of the Regulatory Review Act, IRRC may convey any comments, recommendations or objections to the proposed regulations within 30 days of the close of the public comment period. The comments, recommendations or objections shall specify the regulatory review criteria that have not been met. The Act specifies detailed procedures for review of these issues by the Department, the General Assembly and the Governor prior to final publication of the regulations.

J. Public Comments

Written Comments - Interested persons are invited to submit comments, suggestions, or objections regarding the proposed regulation to the Environmental Quality Board, P.O. Box 8477, Harrisburg, PA 17105-8477 (express mail: Rachel Carson State Office Building, 16th Floor, 400 Market Street, Harrisburg, PA 17101-2301). Comments submitted by facsimile will not be accepted. Comments, suggestions or objections must be received by the Board by within 30 days of publication in the *Pennsylvania Bulletin.* Interested persons may also submit a summary of their comments to the Board. The summary may not exceed one page in length and must also be received by within 30 days following publication in the *Pennsylvania Bulletin*. The one-page summary will be provided to each member of the Board in the agenda packet distributed prior to the meeting at which the final regulation will be considered.

Electronic Comments – Comments may be submitted electronically to the Board at RegComments@state.pa.us and must also be received by the Board within 30 days of publication in the *Pennsylvania Bulletin*. A subject heading of the proposal and a return name and address must be included in each transmission.

BY:

JOSEPH R. POWERS
Acting Chairman
Environmental Quality Board