

Regulatory Analysis Form

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(1) Agency

Department of Environmental Protection

(2) I.D. Number (Governor's Office Use)

7-382

IRRC Number: 2330

(3) Short Title

Filter Backwash Recycling Rule (FBRR)

(4) Pa. Code Cite

25 Pa. Code Chapter 109

(5) Agency Contacts & Telephone Numbers

Primary Contact: Sharon Trostle, 783-1303

Secondary Contact: Michele Tate, 783-1303

(6) Type of Rulemaking (Check One)

- Proposed Rulemaking
 Final Order Adopting Regulation
 Final Order, Proposed Rulemaking Omitted

(7) Is a 120-Day Emergency Certification Attached?

- No
 Yes: By the Attorney General
 Yes: By the Governor

(8) Briefly explain the regulation in clear and non-technical language.

The federal FBRR was promulgated on June 8, 2001. This rule is intended to further protect public health by requiring public water systems (PWSs), where needed, to institute changes to the return of recycle flows to a plant's treatment process that may otherwise compromise microbial control. The FBRR applies to all public water systems that use surface water or groundwater under the direct influence of surface water (GUDI) sources; utilize direct or conventional filtration processes; and recycle spent filter backwash water, sludge thickener supernatant, or liquids from dewatering processes.

The FBRR requires that recycled filter backwash water, sludge thickener supernatant, and liquids from dewatering processes must be returned to a location such that all processes of a system's conventional or direct filtration including coagulation, flocculation, sedimentation (conventional filtration only), and filtration are employed. Systems may apply to the State for approval to recycle at an alternate location.

(9) State the statutory authority for the regulation and any relevant state or federal court decisions.

The Pennsylvania Safe Drinking Water Act, (35 P.S. § 721.4(a)) and Sections 1917-A and 1920-A of the Administrative Code of 1929, 71 P.S. § 510-7 and 510-20(b).

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(10) Is the regulation mandated by any federal or state law or court order, or federal regulation? If yes, cite the specific law, case or regulation, and any deadlines for action.

Yes. Section 1413 of the Federal Safe Drinking Water Act, 42 U.S.C. § 300g-2a, requires that, in order for the state to retain primary enforcement authority (primacy), the state must adopt drinking water regulations that are "no less stringent than" the national primary drinking water regulations not later than 2 years after the date on which the regulations are promulgated by Environmental Protection Agency (EPA), or ask EPA for an extension of up to 2 years. The federal drinking water primacy regulations at 40 CFR § 142.12(a) also require the state to adopt all new and revised national primary drinking water regulations contained in 40 CFR Part 141 in order to retain primary enforcement responsibility. Furthermore, Section 4(a) of the Pennsylvania Safe Drinking Water Act, 35 P.S. § 721.4(a), requires the Environmental Quality Board to adopt maximum contaminant levels and treatment technique requirements no less stringent than those promulgated under the federal act for all contaminants regulated under the national primary and secondary drinking water regulations. Also Section 5(a) of the state act, 35 P.S. § 721.5(a), requires the Department to adopt and implement a public water supply program which includes those program elements necessary to assume state primary enforcement responsibility under the federal act.

The final federal FBRR was published in the Federal Register on June 8, 2001 (63 FR 31086). The Department is submitting a primacy extension request to the EPA to adopt regulations implementing the FBRR by no later than June 8, 2004. It is expected that EPA will grant the extension because the State is adopting two or more EPA regulations at the same time, which is one of the criteria specified for the EPA to grant an extension. If EPA grants the June 8, 2004 extension, then failure to adopt the FBRR by this extension date may result in Pennsylvania losing its primary enforcement responsibility.

(11) Explain the compelling public interest that justifies the regulation. What is the problem it addresses?

The purpose of the FBRR is to require public water systems to review their recycle practices and, where appropriate, work with the Department to make necessary changes to recycle practices that may compromise microbial control. The presence of microbiological contaminants is a health concern. If finished water supplies contain microbiological contaminants, illnesses and disease outbreaks may result. Of the 12 waterborne *cryptosporidiosis* outbreaks that have occurred nationwide at drinking water systems since 1984, three were linked to contaminated drinking water utilities where recycle practices were identified as a possible cause.

The Surface Water Treatment Rule (SWTR) and the Interim Enhanced Surface Water Treatment Rule (IESWTR) set enforceable drinking water treatment technique requirements to reduce the risk of waterborne microbiological disease including *Cryptosporidium* from surface water. The proposed FBRR will provide further necessary protection of *Cryptosporidium* for systems that practice recycling.

(12) State the public health, safety, environmental or general welfare risks associated with non-regulation.

The amendments will greatly reduce the chances of *Cryptosporidiosis* outbreaks in Pennsylvania such as the single *Cryptosporidiosis* outbreak that occurred in Milwaukee in 1994 infecting over 400,000 individuals and causing about 50 fatalities.

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(13) Describe who will benefit from the regulation. (Quantify the benefits as completely as possible and approximate the number of people who will benefit.)

The proposed amendments will benefit customers of public water systems, which practice recycling and which use surface water or GUDI sources. Currently, there are about 120 systems in Pennsylvania serving water to about 5,178,300 people that meet these criteria.

The economic benefits of the FBRR derive from the increased level of protection to public health. The primary benefits of the proposed rule come from reductions in the risk of illness from microbial pathogens in drinking water. In particular, FBRR focuses on reducing the risk associated with disinfection resistant pathogens, such as *Cryptosporidium*.

Available literature research demonstrates that increased hydraulic loading or disruptive hydraulic currents such as may be experienced when plants exceed operating capacity or when recycle is returned directly into the sedimentation basin can disrupt filter and sedimentation performance. The primary goal of the amendments is to improve public health by increasing the level of protection from exposure to *Cryptosporidium* and other pathogens (i.e. *Giardia* or other waterborne bacterial or viral pathogens) in drinking water supplies through improvements in recycling process at water systems. Implementation of these provisions is expected to reduce the potential for *ooocysts* getting into the finished water and causing cases of *Cryptosporidiosis*. Exposure to other pathogenic protozoa, such as *Giardia*, or other emerging microbial pathogens is likely to be reduced by this rule as well.

In addition to preventing illnesses, the proposed rule is expected to have other non-health related benefits. These benefits result from avoiding non-health related costs associated with waterborne disease outbreaks. During an outbreak, local governments and water systems must issue warnings and alerts and may need to provide an alternative source of water. Systems also face negative publicity and possible legal costs. The monetary costs associated with an outbreak can be difficult to quantify and will vary with a host of criteria. However, one study of a *Giardia* outbreak in Luzerne County estimated these non-health related costs to be quite significant. This study estimated losses to individuals due to actions taken to avoid the contaminated water at between \$19 million and \$49 million, in 1984 dollars (\$31M-\$81M in 2000\$). Losses due to averting actions for restaurants and bars totaled \$1 million and \$0.6 million for schools and other businesses, in 1984 dollars. The burden for government agencies was \$230,000 and the outbreak cost the water utility an estimated \$1.8 million, again in 1984 dollars.

(14) Describe who will be adversely affected by the regulation. (Quantify the adverse effects as completely as possible and approximate the number of people who will be adversely affected.)

Under the proposed amendments, customers of public water systems that use surface water or GUDI sources utilize direct or conventional filtration and recycle their waste streams may face increase in cost related to their water bills. The FBRR will result in increased costs to public water systems for reporting recycle practices to the Department. The Department will also face implementation costs associated with evaluating system's recycling reports and recycle practices. The actual increase in water use rates will depend on a number of factors, including population served and the filtration technology utilized. According to EPA studies conducted nationally, the mean annual cost per household is \$0.19 and the total annual cost per household is less than \$1.70 for 99 percent of the 31.4 million households potentially affected by the FBRR. The remaining one percent of households will experience a range of costs between \$1.70 and approximately \$100 per year. Only 321 of the 31.4 million households nationwide potentially affected by the FBRR (0.00001 percent) are expected to incur costs of approximately \$100 per year.

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(15) List the persons, groups, or entities that will be required to comply with the regulation. (Approximate the number of people who will be required to comply.)

About 120 public water systems that use surface water or GUDI sources; utilize direct or conventional filtration processes; and recycle spent filter backwash water, sludge thickener supernatant, or liquids from dewatering processes are required to comply with the amendments. Approximately 5,178,300 Pennsylvanians obtaining their drinking water from these systems will be affected by the regulation.

(16) Describe the communications with and input from the public in the development and drafting of the regulation. List the persons and/or groups who were involved, if applicable.

The federal FBRR was developed through the regulatory negotiation process with many participants. These participants included public water systems, environmental groups, and public health groups. In drafting the proposed amendments for Pennsylvania, both the Water Resources Advisory Committee (WRAC) and the Technical Assistance Center Advisory (TAC) Board provided suggestions. A thirty-day public comment period will also be scheduled and public comments will be addressed.

(17) Provide a specific estimate of the costs and/or savings to the regulated community associated with compliance, including any legal, accounting, or consulting procedures, which may be required.

The regulated community is considered to mean the public water suppliers who would be impacted by the proposed amendments. The consumers of water supplied by the public water systems that use surface water or GUDI sources; utilize direct or conventional filtration processes; and recycle spent filter backwash water, sludge thickener supernatant, or liquids from dewatering processes will experience higher water use rates associated with costs for reading and understanding the rule, reporting recycling practices to the state, and capital improvements to recycle return locations.

The EPA has estimated annual costs of the FBRR to be \$5.84 million or \$7.2 million (annualized using a three percent or seven percent discount rate respectively). Total capital and associated O&M costs associated with modifications to recycle locations at an estimated 371 systems nationwide are \$45.2 million, and represent \$5.5 million or \$6.8 million annually (annualized over 20 years using a three percent or seven percent discount rate, respectively). The benefits for Pennsylvania resulting from these amendments range from \$0.02 billion to \$0.1 billion per year using a valuation of \$2000 in health damages avoided per cryptosporidiosis illness prevented.

(18) Provide a specific estimate of the costs and/or savings to local governments associated with compliance, including any legal, accounting, or consulting procedures which may be required.

The FBRR will affect all public water systems that use surface water or GUDI sources; utilize direct or conventional filtration processes; and recycle spent filter backwash water, sludge thickener supernatant, or liquids from dewatering processes. Currently, there are almost 120 systems in Pennsylvania that meet these criteria of which about 15 are owned by the local governments. The local governments that own these utilities will have to incur additional annual utility costs.

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(19) Provide a specific estimate of the costs and/or savings to state government associated with the implementation of the regulation, including any legal, accounting, or consulting procedures which may be required.

The Commonwealth will incur additional costs to implement the amendments. Costs will also be borne by the Department for training, permitting, surveillance, and compliance assistance. The Department will also face implementation costs associated with evaluating system's recycle report and recycle practices.

Primary activities in the first 3 years after adoption of the amendments will include engineering review of permit amendments applications and enforcement related activities. After the initial 3 years following adoption, program activities will shift to include field surveillance and compliance follow-up activities.

(20) In the table below, provide an estimate of the fiscal savings and cost associated with implementation and compliance for the regulated community, local government, and state government for the current year and five subsequent years.

	Current FY Year	FY +1 Year	FY +2 Year	FY +3 Year	FY +4 Year	FY +5 Year
SAVINGS:	\$	\$	\$	\$	\$	\$
Regulated Community	0	0	0	0	0	0
Local Government	0	0	0	0	0	0
State Government	0	0	0	0	0	0
Total Savings	0	0	0	0	0	0
COSTS:						
Regulated Community	\$464,000	\$464,000	\$464,000	\$464,000	\$464,000	\$464,000
Local Government	0	0	0	0	0	0
State Government	\$5600	\$5600	\$5600	\$5600	\$5600	\$5600
Total Costs	\$469,600	\$469,600	\$469,600	\$469,600	\$469,600	\$469,600
REVENUE LOSSES:						
Regulated Community	0	0	0	0	0	0
Local Government	0	0	0	0	0	0
State Government	0	0	0	0	0	0
Total Revenue Losses	0	0	0	0	0	0

(20a) Explain how the cost estimates listed above were derived.

The cost estimate was derived using EPA's national estimates as published in the Preamble of the FBRR (Federal Register, Vol. 66, No. 111). The EPA based their estimate on about 371 systems nationwide, which will require capital improvements to recycle return location. The recycle return provision of FBRR accounts for 95% of total annualized costs. Public Water System expenditures nationwide for all provisions are greater than 99% (\$5.8 million at three percent discount rate or \$6.7 million using a seven percent discount rate) of total annualized costs. Pennsylvania has about 120 systems likely to be affected by the proposed rule of which 30 systems may require capital improvements to recycle return location. State expenditures make up less than 1 percent (\$0.07 million at three percent discount rate or \$0.098 million at a seven percent discount rate).

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(20a) Continued.

The ratio of PA to nationwide is $30/371 = 0.08$. The federal estimate is multiplied by the ratio to get the Pennsylvania estimate, e.g.:

Estimated nationwide regulated community cost to implement = \$5.8 million

Estimated annual utility costs to Pennsylvania systems = \$5.8 million x 0.08 = \$464,000

EPA estimated annual State costs to implement FBRR = \$0.07 million

Estimated DEP annual costs to implement the amendments = \$0.07 million x 0.08 = \$5600

Although DEP is projecting these estimates from nationwide estimates, the costs of implementing the proposed amendments may be much lower because most Pennsylvania systems are already recycling their waste stream to the head of the plant.

The estimated \$5600 cost to state government will be applied to the Environmental Protection Operations appropriation (160--field) and the Environmental Program Management appropriation (161--central office). The breakdown is 82% in 160 (\$4592) and 18% in 161 (\$1008).

(20b) Provide the past three-year expenditure history for programs affected by the regulation.

Program	FY-3	FY-2	FY-1	Current FY
Env. Protection Operations (Approp. 160)	\$71,402,000	\$76,018,000	\$75,074,000	\$76,323,000
Env. Program Management (Approp. 161)	40,200,000	41,471,000	43,354,000	44,224,000

The safe drinking water program expenditures from the above appropriations are as follows:

<i>Env. Protection Operations (160)</i>	<i>491,116</i>	<i>792,445</i>	<i>853,816</i>	<i>950,000</i>
<i>Env. Program Management (161)</i>	<i>2,210,022</i>	<i>3,566,000</i>	<i>3,842,170</i>	<i>5,420,000</i>

(21) Using the cost-benefit information provided above, explain how the benefits of the regulation outweigh the adverse effects and costs.

The FBRR is not expected to provide any adverse health effects. The economic benefits of the proposed amendments derive from the increased level of protection to public health. The amendment is expected to reduce the level of *Cryptosporidium* and other pathogen contamination in finished drinking water supplies through improvements in recycling processes. In this case, benefits will accrue due to the decreased likelihood of endemic incidences of cryptosporidiosis, *Giardiasis* and other waterborne diseases. In addition, to reducing the endemic disease, the provisions are expected to reduce the likelihood of the occurrence of *Cryptosporidium* outbreaks and their associated economic costs.

<p>(22) Describe the non-regulatory alternatives considered and the costs associated with those alternatives. Provide the reasons for their dismissal. No non-regulatory alternatives were considered. This is a federal rule that must be either complied with, or adopted, by the individual states.</p>
<p>(23) Describe alternative regulatory schemes considered and the costs associated with those schemes. Provide the reasons for their dismissal. No alternative regulatory schemes were considered. This is a federal rule that must be either complied with, or adopted, by the individual states.</p>
<p>(24) Are there any provisions that are more stringent than federal standards? If yes, identify the specific provisions and the compelling Pennsylvania interest that demands stronger regulation. The proposed amendments contain no provisions that are more stringent than the federal FBRR.</p>
<p>(25) How does the regulation compare with those of other states? Will the regulation put Pennsylvania at a competitive disadvantage with other states? The federal FBRR will need to be either complied with, or adopted, by all of the other 49 states. Because of this, the proposed amendments will not put Pennsylvania at a competitive disadvantage with other states.</p>
<p>(26) Will the regulation affect existing or proposed regulations of the promulgating agency or other state agencies? If yes, explain and provide specific citations. The amendments will not affect existing or proposed regulations of DEP. The amendments will be incorporated into the existing language of Title 25, Pa. Code Chapter 109 and will enhance the existing Filtration Rule and IESWTR by reducing the risk of exposure to waterborne pathogens including <i>Cryptosporidium</i>.</p>
<p>(27) Will any public hearings or informational meetings be scheduled? Please provide the dates, times, and locations, if available. No public hearings or informational meetings are scheduled for these proposed amendments.</p>
<p>(28) Will the regulation change existing reporting, record keeping, or other paperwork requirements? Describe the changes and attach copies of forms or reports that will be required as a result of implementation, if available. The proposed amendments will not create any major change in the reporting, record keeping, and paperwork requirements. It is anticipated that our current data reporting forms will easily facilitate any additional monitoring and reporting, and that no additional data or paperwork will be necessary.</p>
<p>(29) Please list any special provisions which have been developed to meet the particular needs of affected groups or persons including, but not limited to, minorities, elderly, small businesses, and farmers. The proposed amendments were originally developed to protect everyone and should have no effect on any one group. However, the Safe Drinking Water Program is prepared to develop special provisions to accommodate any such group as need arises.</p>

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(30) What is the anticipated effective date of the regulation; the date by which compliance with the regulation will be required; and the date by which any required permits, licenses, or other approvals must be obtained?

The final federal FBRR was published in the Federal Register on June 8, 2001 (63 FR 31086). The Department is submitting a primacy extension request to the EPA to adopt regulations implementing the FBRR by no later than June 8, 2004. It is expected that EPA will grant the extension because the State is adopting two or more EPA regulations at the same time, which is one of the criteria specified for the EPA to grant an extension. If EPA grants the June 8, 2004 extension, then failure to adopt the FBRR by this extension date may result in Pennsylvania losing its primary enforcement responsibility.

Until these rules are adopted in Pennsylvania, DEP does not have the regulatory authority to enforce compliance with any new or revised EPA requirements that are not automatically adopted by reference from the federal regulations. During the requested extension period, DEP will continue to support the implementation of 40 CFR § 141.76(a) through § 141.76(d) for FBRR.

(31) Provide the schedule for continual review of the regulation.

The amendments will be reviewed in accordance with the Sunset Review Schedule published by the Department.

FACE SHEET
FOR FILING DOCUMENTS
WITH THE LEGISLATIVE REFERENCE BUREAU

(Pursuant to Commonwealth Documents Law)

REC'D
LEGISLATIVE REFERENCE BUREAU
JAN 14 2003

#2330

DO NOT WRITE IN THIS SPACE

Copy below is hereby approved as to form and legality. Attorney General

Cristina J. Quinn
(DEPUTY ATTORNEY GENERAL)

1/14/03

DATE OF APPROVAL

Check if applicable
Copy not approved. Objections attached.

Copy below is hereby certified to be a true and correct copy of a document issued, prescribed or promulgated by:

DEPARTMENT OF ENVIRONMENTAL PROTECTION
ENVIRONMENTAL QUALITY BOARD

(AGENCY)

DOCUMENT/FISCAL NOTE NO. #7-382

DATE OF ADOPTION:

BY: *David E. Hess*

TITLE: DAVID E. HESS, CHAIRMAN
(EXECUTIVE OFFICER, CHAIRMAN OR SECRETARY)

Copy below is hereby approved as to form and legality. Executive or Independent Agency

BY: *J. Keith Ray*

12/24/02

DATE OF APPROVAL

(Deputy General Counsel)
(Chief Counsel, Independent Agency)
(Strike inapplicable title)

Check if applicable. No Attorney General approval or objection within 30 days after submission.

NOTICE OF
PROPOSED RULEMAKING
DEPARTMENT OF ENVIRONMENTAL PROTECTION
ENVIRONMENTAL QUALITY BOARD

FILTER BACKWASH RECYCLING RULE (FBRR)

25 PA Code, Chapter 109

Notice of Proposed Rulemaking
Department of Environmental Protection
Environmental Quality Board
(25 Pa. Code, Chapter 109)
(Safe Drinking Water)
(Filter Backwash Recycling Rule (FBRR))

Preamble

The Environmental Quality Board (Board) proposes to amend 25 Pa. Code, Chapter 109 (relating to Safe Drinking Water). The proposed amendment in general pertains to public water systems using surface water or groundwater under direct influence of surface water (GUDI); utilizing direct or conventional filtration processes; and recycling backwash water, sludge thickener supernatant, or liquid from dewatering processes.

This rule is intended to further protect public health by requiring public water systems (PWSs), where needed, to institute changes to the return of recycle flows to a plant's treatment process that may otherwise compromise microbial control. The FBRR requires that recycled filter backwash water, sludge thickener supernatant, and liquids from dewatering processes must be returned to a location such that all processes of a system's conventional or direct filtration including coagulation, flocculation, sedimentation (conventional filtration only), and filtration are employed. Systems may apply to the Department of Environmental Protection (Department) for approval to recycle at an alternate location.

The proposal was adopted by the Board at its meeting of December 17, 2002.

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 Jeffrey A. Gordon, Chief, Division of Drinking Water Management, 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 H 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 Website (<http://www.dep.state.pa.us>).

C. Statutory Authority

The proposed rulemaking is being made under the authority of Section 4 of the Pennsylvania Safe Drinking Water Act (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

DEP promulgated the Filtration Rule in March of 1989 to address the rising number of waterborne disease outbreaks in Pennsylvania. The rule required public water systems with surface water sources to filter and disinfect the water before use by the public, cover finished water reservoirs, perform treatment performance and water quality compliance monitoring, and provide public notification of violations. The rule also established design and performance standards for the filtration and disinfection treatment techniques intended to protect against the adverse health effects of exposure to *Giardia lamblia*, viruses, and legionella, as well as many other pathogenic organisms.

DEP also promulgated the Interim Enhanced Surface Water Treatment Rule (IESWTR) on July 21, 2001. This rule is intended to improve the control of microbial pathogens, specifically including the protozoan *Cryptosporidium parvum*, in drinking water. The IESWTR applies to Public Water Systems serving 10,000 or more people and which use surface water or groundwater under the direct influence of surface water (GUDI). Key provisions include 99% *Cryptosporidium* removal requirements for systems that filter; strengthened combined, and individual, filter effluent turbidity performance standards; disinfection benchmark provisions to assure continued levels of microbial protection while facilities take the necessary steps to comply with new disinfection byproduct standards; inclusion of *Cryptosporidium* in the definition of GUDI; and sanitary surveys for all surface water systems regardless of size.

Water treatment plants generate various waste streams during the water production process as well as during subsequent waste handling procedures. Waste streams can be a large volume, such as spent filter backwash water, which can make up more than 3 percent of plant production, or very small, like streams of filtrate from a filter press, which may represent less than 0.1 percent of plant production. The waste streams can be handled in a variety of ways. Some treatment plants recycle the wastewater to the beginning of the treatment cycle, where the water will be treated again. Other plants waste it by sending it into the local wastewater treatment plant. Still other plants obtain a discharge permit and release the water to a river or stream after some additional treatment. Increasingly stringent discharge requirements, expensive chemicals, and conservation efforts have forced many plants to consider or implement recycling. Recycling of water treatment plant waste streams is an acceptable practice of good water conservation management. The proposed regulation does not mandate recycling nor does it intend to discourage the recycling of waste streams.

When a facility recycles filter backwash water, it reintroduces contaminants into treatment processes. Poor recycle practices can degrade influent water quality and impair treatment process performance. The 1996 Amendments to the Federal Act required EPA to promulgate a regulation governing the recycling of filter backwash water. EPA promulgated the federal FBRR on June 8, 2001. The federal FBRR addresses filter backwash water and two additional recycle streams of concern, sludge thickener supernatant and liquids from dewatering processes. EPA believes that establishing such a regulation will improve performance at filtration plants by reducing the opportunity for recycle practices to adversely affect plant performance in a way that would allow microbes such as *Cryptosporidium* to pass through into finished water. While the Pennsylvania Filtration Rule and the IESWTR contained treatment technique requirements designed to address microbial pathogens such as *Giardia* and *Cryptosporidium*, neither the Pennsylvania Filtration Rule nor the IESWTR addressed filter backwash recycling practices. About 120 surface water treatment plants using conventional or direct filtration practice some form of waste stream recycling in Pennsylvania.

The Department is proposing to incorporate the provisions of the federal FBRR into the Pennsylvania Safe Drinking Water Regulations to retain primacy for enforcement responsibility of safe drinking water. The amendment will provide additional protection against disease-causing organisms (pathogens) in drinking water. This action would address risks associated with certain recycle practices in the least burdensome, most effective and simplest means possible. The amendment will allow recycle practices to be conducted in a manner that does not upset the chemical treatment and coagulation process vital to the performance and contaminant removal capability of a filtration plant. The amendment will also assure that *Cryptosporidium oocysts* in recycled water, as well as source water, receive the full benefit of well-operated treatment processes to achieve at least 99% *Cryptosporidium* removal.

The proposal will improve public health by increasing the level of protection from exposure to *Cryptosporidium* and other pathogens in drinking water supplies through improvements in recycling processes at water treatment plants. This will decrease the likelihood of endemic illness from *Cryptosporidium* by several thousand cases annually thus reducing health care costs. Implementation of these provisions is expected to reduce the potential for oocysts getting into the finished water and causing cases of Cryptosporidiosis. Exposure to other pathogenic protozoa, such as *Giardia*, or other emerging microbial pathogens is likely to be reduced by this rule as well.

In terms of occurrence, *Cryptosporidium* is common in the environment. Most surface water sources contain or are vulnerable to *Cryptosporidium oocyst* contamination at one time or another. Since some people are carriers, *oocysts* may enter the water through treated and untreated sewage outfall. Other sources of *Cryptosporidium* contamination are those animals that live in or near the water who are likely to deposit *oocysts* directly into the drinking water supplies. Livestock are notorious carriers of *Cryptosporidium*. Runoff from watersheds allows transport of this pathogen into water bodies used as

sources for drinking water treatment plants. Complicating this matter is *Cryptosporidium*'s resistance to standard disinfection practices.

In humans *Cryptosporidium* may cause a severe infection that can last several weeks. It may cause the death of individuals who have a weaker immune system due to age, cancer treatment, AIDS, and anti-rejection organ replacement drugs. In 1993, *Cryptosporidium* caused over 400,000 people in Milwaukee to experience serious intestinal illness. More than 4,000 were hospitalized and at least 50 deaths were attributed to the *Cryptosporidium* outbreak. There have also been Cryptosporidiosis outbreaks in Nevada, Oregon, and Georgia over the past several years.

The draft proposed rule was submitted for comments to the Water Resources Advisory Committee (WRAC) on September 11, 2002. The WRAC approved the regulations with the condition that the Department consider the WRAC comments. The draft proposed rule was submitted for comments to the Technical Assistance Center (TAC) Advisory Board on August 13, 2002. TAC provided comments at the meeting, which have been addressed.

Advisory Committee Recommendations

1. *The TAC wanted to know the breakdown of the 120 affected PWSs*

The Department conducted a survey of Public Water Systems in Pennsylvania using conventional filtration or direct filtration to determine recycling practices in the Commonwealth. A survey of 243 filtration systems shows that about 120 of the systems practice some form of recycling. The estimated breakdown of this group is as follows:

- Less than 3300 = 43 systems
- 3300 to 10,000 = 29 systems
- Greater than 10,000 = 48 systems.

2. *The TAC wanted to know the average Cost of Repairs for systems making capital improvements*

According to EPA's national estimates as published in the Preamble of the FBRR (Federal Register, Vol. 66, No. 111), 371 systems nationwide will have a total annualized cost of \$5.8 million for capital improvements to recycle return location. According to the recycle survey conducted by the Department for Pennsylvania filtration systems, it is estimated that about 30 systems will need capital improvements to recycle return location.

The ratio of PA to nationwide is $30/371$ systems = 0.08.

The federal estimate is multiplied by the ratio to get the Pennsylvania estimate, e.g.:

Estimated annualized nationwide cost for capital improvements to recycle location = \$5.8 million

Estimated annualized cost for capital improvements to recycle location to Pennsylvania systems = $\$5.8 \times 0.08 = \$464,000$

3. *The TAC wanted to know if December 8, 2003, implementation date is correct.*

The January 4, 2003, date in Section 109.701 (h) is a typographical error. The correct date should be December 8, 2003.

Public water systems using conventional filtration or direct filtration treatment and that recycle spent filter backwash water, thickener supernatant, or liquids from dewatering processes must notify the department in writing by December 8, 2003.

4. *The WRAC wanted definitions for “Recycle” and “Capital Improvement” included in the regulation.*

The definitions have been added to the regulations. A definition for “Recycle Flows” was also added.

5. *The WRAC wanted the Department to include in the Preamble that recycling is a good practice. They noted that the practice of recycling is good management conservation and should not be discouraged.*

A statement has been added to the third paragraph of this section.

6. *The WRAC wanted the Department to send the proposed regulation to “stakeholder groups” in Pennsylvania for review.*

The Environmental Protection Agency (EPA) involved a national stakeholder group during development of the FBRR. The proposed rule is not more stringent than the federal rule. The stakeholder groups have the opportunity to review and comment on the proposed regulations. Therefore, there is no need to have a separate Pennsylvania stakeholder group review the proposed regulations.

7. *The WRAC wanted the Department to exempt systems that provide membrane filtration of the filter backwash wastes, etc. and use the filtrate as finished water (i.e. send filtrate to the chlorine contact tank, rather than to the head of the plant, from the provisions of the backwash recycling rule.)*

The federal FBRR requires regulated recycle streams to be returned through all the processes of a system’s existing conventional or direct filtration plant or at an alternate recycle location approved by the state. Compared to the source water, the waste streams have significantly higher levels of contaminants including *Cryptosporidium oocysts* and *Giardia cysts*. Separate treatment of the wastewater

reduces the number of microbial and pathogenic organisms prior to recycle and, therefore, significantly reduces the risk associated with passing these organisms through the conventional or direct filtration plant in the event of a hydraulic surge, for example. Even with failure of the wastewater treatment, the barriers provided by conventional and direct filtration will help to reduce the risk of passing cysts and oocysts. If the treated recycle water were discharged or recycled directly to the finished water, any failure of the membrane filtration treatment would allow the discharge of significant amounts of cysts and oocysts which would result in a significant health risk to the consumer. Therefore, the Department does not consider the finished water as an acceptable alternative recycle return location.

The federal Safe Drinking Water Act (42 U.S.C.A. § 300g-2(a)) requires that primary enforcement responsibility states, such as Pennsylvania, adopt EPA regulations no later than two years after EPA promulgation. EPA may approve an extension of up to two years for states that: 1) lack legislative or regulatory authority to enforce the new requirements, 2) lack program capability to implement the new regulations, or 3) are adopting two or more regulations at the same time.

The final federal FBRR was published in the Federal Register on June 8, 2001 (63 FR 31086). The Department is submitting a primacy extension request to the EPA to adopt regulations implementing the FBRR by no later than June 8, 2004. It is expected that EPA will grant the extension because the State is adopting two or more EPA regulations at the same time. If EPA grants the June 8, 2004 extension, then failure to adopt the FBRR by this extension date may result in Pennsylvania losing its primary enforcement responsibility.

E. Summary of Regulatory Requirements

The proposed amendments reflect the new federal requirements. The amendments are being proposed because there is no language currently in Chapter 109 that addresses the new federal requirements.

The Safe Drinking Water Program plans to involve and inform the public of the proposed amendments through publication in the *Pennsylvania Bulletin*. The Department will also post notice and information about the amendments on the Department's Internet site at www.dep.state.pa.us. In addition, safe drinking water program staff is prepared to attend public meetings if invited to do so.

Major components of the amendments include the following provisions:

§ 109.202(h)

This subsection requires all public water supply systems affected by this rule to return affected recycle flows through the processes of the system's existing conventional or direct filtration system as defined in Section 109.1 or at an alternate location approved by the Department by June 8, 2004. If capital improvements are required to modify the

recycle location to meet this requirement, all capital improvements must be completed no later than June 8, 2006.

§ 109.701(h)(i)

This subsection requires all PWSs affected by this rule to notify the Department in writing by December 8, 2003, if the system recycles spent filter backwash water, thickener supernatant, or liquids from dewatering processes.

Submitted information must include a plant schematic showing the origin of all flows, which are recycled (including but not limited to spent filter backwash water, thickener supernatant, and liquids from dewatering processes), the hydraulic conveyance used to transport them, and the location where they are reintroduced into the treatment plant.

The systems must also submit to the Department the typical recycle flow in gallons per minute (gpm), the highest observed plant flow experience in the previous year (gpm), design flow for the treatment plant (gpm), and Department approved operating capacity for the plant where the Department has made such determinations.

§ 109.701 (h)(ii)

This paragraph requires affected PWSs to collect and retain on file by June 8, 2004, the following recycle flow information for Department review and evaluation: copy of the recycle notification and information submitted to the Department; list of all recycle flows and the frequency with which they are returned; average and maximum backwash flow rate through the filters and the average and maximum duration of the filter backwash process in minutes.

Also, to be retained for Department review are typical filter run length and a written summary of how filter run length is determined; the type of treatment provided for the recycle flow; data on the physical dimensions of the equalization and/or treatment units, typical and maximum hydraulic loading rates, type of treatment chemicals used and average dose and frequency of use, and frequency at which solids are removed, if applicable.

F. Benefits, Costs, and Compliance

Executive Order 1996-1 requires a cost/benefit analysis of the proposed regulation.

Benefits

The proposed amendments will benefit customers of public water systems, which utilize direct or conventional filtration, use surface water or GUDI sources, and practice recycling. Currently, there are about 120 systems in Pennsylvania serving water to about 5,178,300 people that meet these criteria.

The economic benefits of the FBRR derive from the increased level of protection to public health. The primary benefits of the proposed rule come from reductions in the risk of illness from microbial pathogens in drinking water. In particular, FBRR focuses on reducing the risk associated with disinfection resistant pathogens, such as *Cryptosporidium*.

Available literature research demonstrates that increased hydraulic loading or disruptive hydraulic currents such as may be experienced when plants exceed operating capacity or when recycle is returned directly into the sedimentation basin can disrupt filter and sedimentation performance. The goal of the amendments is to improve public health by increasing the level of protection from exposure to *Cryptosporidium* and other pathogens (i.e. *Giardia* or other waterborne bacterial or viral pathogens) in drinking water supplies through improvements in the recycling process at water systems. Implementation of these provisions is expected to reduce the potential for oocysts getting into the finished water and causing cases of *Cryptosporidiosis*. Exposure to other pathogenic protozoa, such as *Giardia*, or other emerging microbial pathogens is likely to be reduced by this rule as well.

In addition to preventing illnesses, the proposed rule is expected to have other non-health related benefits. These benefits result from avoiding non-health related costs associated with waterborne disease outbreaks. During an outbreak, local governments and water systems must issue warnings and alerts and may need to provide an alternative source of water. Systems also face negative publicity and possible legal costs. The monetary costs associated with an outbreak can be difficult to quantify and will vary with a host of criteria. However, one study of a *Giardia* outbreak in Luzerne County estimated these non-health related costs to be quite significant. This study estimated losses to individuals due to actions taken to avoid the contaminated water at between \$19 million and \$49 million, in 1984 dollars (\$31M-\$81M in 2000\$). Losses due to averting actions for restaurants and bars totaled \$1 million and \$0.6 million for schools and other businesses, in 1984 dollars. The burden for government agencies was \$230,000 and the outbreak cost the water utility an estimated \$1.8 million, again in 1984 dollars.

Compliance Costs

Increased costs will be borne by the regulated community for systems making capital improvements to modify recycle location. Additional training, permitting, surveillance, and compliance assistance costs will also be borne by the Department.

The consumers of water supplied by about 120 affected public water systems using surface water or GUDI; utilize direct or conventional filtration processes; and recycle backwash water, sludge thickener supernatant, or liquid from dewatering processes may experience higher water use rates associated with costs for capital improvements to modify recycle locations. The actual increase in water use rates will depend on a number of factors, including population served and type of improvements done.

Compliance Assistance Plan

The 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.

Paperwork Requirements

The Department's current data forms will facilitate any additional monitoring and reporting or paperwork.

F. 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.

G. Regulatory Review

Under Section 5(a) of the Regulatory Review Act (71 P.S. §745.5(a)), the Department submitted a copy of the proposed rulemaking on February 18, 2003, to the Independent Regulatory Review Commission (IRRC) and the Chairpersons of the Senate and House 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.

H. 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, 15th Floor, 400 Market Street, Harrisburg, PA 17101-2301). Comments submitted by facsimile will not be accepted. The Board must receive comments, suggestions or objections by ~~March 31~~^{3/31}, 2003. 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 March 31, 2003. 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 by March 31, 2003. A subject heading of the proposal and a return name and address must be included in each transmission. If the sender within two working days does not receive an acknowledgement of electronic comments, the comments should be retransmitted to ensure receipt.

BY:

Kathleen A. McGinty
Acting Chairperson
Environmental Quality Board

Annex A

TITLE 25. ENVIRONMENTAL PROTECTION

Subpart C. PROTECTION OF NATURAL RESOURCES

ARTICLE II. WATER RESOURCES

CHAPTER 109. SAFE DRINKING WATER

Subchapter A. GENERAL PROVISIONS

§ 109.1. Definitions.

Liquid from dewatering processes – A stream containing liquids generated from a unit used to concentrate solids for disposal.

Recycle – The act of returning recycle streams to a conventional or direct filtration plant's treatment process.

Recycle flows – Any water, solid, or semi-solid generated by a conventional or direct filtration plant's treatment process and residual treatment processes that is returned to the plant's treatment process. Also, referred to as recycle streams.

Spent filter backwash water – A stream containing particles dislodged from filter media when the filter is backwashed to clean the filter.

Thickener supernatant – A stream containing the decant from a clarifier, sedimentation basin, or other unit used to treat water, solids, or semi-solids from the primary treatment process.

SUBCHAPTER B. MCLs, MRDLs OR TREATMENT TECHNIQUE REQUIREMENTS

§ 109.202. State MCLs, MRDLs and treatment technique requirements.

(h) **Recycling of waste stream. If no capital improvements are required, a public water supply system that uses a surface water source or GUDI and provides conventional filtration or direct filtration treatment and recycles spent filter backwash water, thickener supernatant, or liquids from dewatering processes must return these flows through the processes of the system's existing conventional or direct filtration system as defined in § 109.1 (relating to definitions) or at an alternate location approved by the Department by June 8, 2004. If capital improvements are required to modify the recycle location to meet this requirement, all capital improvements must be completed no later than June 8, 2006. Capital improvement means a nonrecurring, significant modification or expenditure for non-routine, long-term physical improvements to any part of a public water system to include, but not limited to, construction activities, renovation activities, demolition activities, source development, treatment process**

modifications, storage modifications, distribution system modifications, waste-processing modifications, and all associated design costs.

SUBCHAPTER G. SYSTEM MANAGEMENT RESPONSIBILITIES

§ 109.701. Reporting and recordkeeping.

(h) Reporting and record maintenance requirements for systems recycling their waste streams.

(1) Public water systems using surface water or GUDI sources and providing conventional filtration or direct filtration treatment and that recycle spent filter backwash water, thickener supernatant, or liquids from dewatering processes must notify the Department in writing by December 8, 2003. This notification must include the following information:

(i) A plant schematic showing the origin of all flows that are recycled (including but not limited to spent filter backwash water, thickener supernatant, and liquids from dewatering processes), the hydraulic conveyance used to transport them, and the location where they are reintroduced back into the treatment plant.

- (ii) **Typical recycle flow in gallons per minute (gpm), the highest observed plant flow experience in the previous year (gpm), design flow for the treatment plant (gpm), and Department-approved operating capacity for the plant.**
- (2) **Record maintenance. Beginning June 8, 2004, public water systems using surface water or GUDI sources and providing conventional filtration or direct filtration and recycle spent filter backwash water, thickener supernatant, or liquids from dewatering processes must collect and retain on file recycle flow information specified in this paragraph. This information is for the previous year of recycling and shall be available to the Department for review and evaluation at the Department's request:**
- (i) **A copy of the recycle notification and information submitted to the Department under subsection (h).**
 - (ii) **A list of all recycle flows and the frequency with which they are returned.**
 - (iii) **Average and maximum backwash flow rate through the filters and the average and maximum duration of the filter backwash process in minutes.**
 - (iv) **Typical filter run length and a written summary of how filter run length is determined.**
 - (v) **The type of treatment provided for the recycle flow.**

- (vi) **Data on the physical dimensions of the equalization and/or treatment units, typical and maximum hydraulic loading rates, type of treatment chemicals used and average dose and frequency of use, and frequency at which solids are removed, if applicable.**



Pennsylvania Department of Environmental Protection

Rachel Carson State Office Building
P.O. Box 2063
Harrisburg, PA 17105-2063
February 21, 2003

Policy Office

717-783-8727

Mr. Robert E. Nyce, Executive Director
Independent Regulatory Review Commission
14th Floor, Harristown #2
333 Market Street
Harrisburg, PA 17120

RE: Proposed Rulemaking: Chapter 109, Filter Backwash Recycling Rule (#7-382)

Dear Mr. Nyce:

Enclosed is a copy of a proposed regulation for review and comment by the Commission pursuant to Section 5(a) of the Regulatory Review Act. This proposal is scheduled for publication as a proposed rulemaking in the *Pennsylvania Bulletin* on March 8, 2003, with a 30-day public comment period. This proposal was approved by the Environmental Quality Board (EQB) on December 17, 2002.

This proposal would amend Chapter 109 to incorporate the requirements contained in the Federal Filter Backwash Recycling Rule (FBRR), which was promulgated on June 8, 2001. The FBRR improves public health by increasing protection from exposure to *Cryptosporidium* and other pathogens through improvements in recycling in public water systems (PWSs). Recycled filter backwash water, sludge thickener supernatant, and liquids from dewatering processes are specifically addressed in this proposed rulemaking. The FBRR also requires that systems submit flow data and recycle location(s) and provide written notification to DEP that they recycle. The rule would apply to 120 PWSs serving approximately 6 million Pennsylvanians.

The deadline for adoption of this proposal is two years after federal promulgation, or June 8, 2003. DEP has requested an extension to this deadline from EPA in order for Pennsylvania to maintain primacy for the Safe Drinking Water Program.

The Small Water Systems TAC and WRAC reviewed and endorsed drafts of the proposal in August and September 2002, respectively. Both advisory groups submitted comments on the draft, all of which have been addressed and are summarized in Section D of the preamble.

The Department will provide the Commission with the assistance required to facilitate a thorough review of this proposal. Section 5(g) of the Act provides that the Commission may, within 30 days after the close of the public comment period, convey to the agency any

comments, recommendations and objections to the proposed regulation. The Department will consider any comments or suggestions received by the Commission, together with Committee and other public comments received prior to final adoption.

For additional information, please contact Michele Tate or me at 783-8727.

Sincerely,

A handwritten signature in cursive script that reads "Sharon F. Trostle".

Sharon F. Trostle
Regulatory Coordinator

Enclosures

**TRANSMITTAL SHEET FOR REGULATIONS SUBJECT TO THE
REGULATORY REVIEW ACT**

I.D. NUMBER: 7-382
SUBJECT: Filter Backwash Recycling Rule (FBRR)
AGENCY: DEPARTMENT OF ENVIRONMENTAL PROTECTION

TYPE OF REGULATION

- X Proposed Regulation
- Final Regulation
- Final Regulation with Notice of Proposed Rulemaking Omitted
- 120-day Emergency Certification of the Attorney General
- 120-day Emergency Certification of the Governor
- Delivery of Tolled Regulation
- a. With Revisions b. Without Revisions

FILING OF REGULATION

DATE	SIGNATURE	DESIGNATION
<u>2-21-03</u>	<u>Cindy Zuni</u>	HOUSE COMMITTEE ON ENVIRONMENTAL RESOURCES & ENERGY
<u>2/11/03</u>	<u>Pat Carnathan</u>	SENATE COMMITTEE ON ENVIRONMENTAL RESOURCES & ENERGY
<u>2/21/03</u>	<u>Elena Payan</u>	INDEPENDENT REGULATORY REVIEW COMMISSION
		ATTORNEY GENERAL (for Final Omitted only)
<u>2/21/03</u>	<u>Mayra Garcia</u>	LEGISLATIVE REFERENCE BUREAU (for Proposed only)

January 15, 2003

