



EPA Final Ground Water Rule



Safe Drinking Water Act: National Primary Drinking Water Regulations

Ground Water Rule –

40 CFR Parts 9, 141 and 142

Final Rule: 71 FR 65574

Effective Date: January 8, 2007¹

RULE SYNOPSIS

On November 8, 2006, the U.S. Environmental Protection Agency (EPA) published a [final Ground Water Rule \(GWR\)](#) to promote increased protection against microbial pathogens that may be present in public water systems (PWSs) that use ground water sources for their supply (these systems are known as ground water systems). This Rule establishes a risk-targeted approach to focus on ground water systems that are susceptible to fecal contamination, and requires ground water systems that are at risk of fecal contamination to take corrective action. A minor correction to the final Rule was published on November 21, 2006 (71 FR 67427).

The GWR applies to all PWSs² that use ground water sources, in whole or in part (including consecutive systems that receive finished ground water from another PWS), except for PWSs that combine all of their ground water with surface water or ground water under the direct influence of surface water because such systems are already subject to existing regulations.

APPLICABILITY TO DOE SITES

Nearly all States are authorized by EPA to administer the PWS program. Through the program delegation agreements, States must adopt their own regulations

¹ Compliance Date: December 1, 2009, unless otherwise noted in the the Rule.

² A PWS can be either a community water system (CWS) or a non-community water system (NCWS). A CWS serves year-round residents, whereas an NCWS can serve partial-year residents or persons who spend time visiting or working at a facility without actually residing there.

that are equivalent to new or revised EPA regulations within two years. Drinking water at Department of Energy (DOE) facilities is monitored in accordance with the applicable SDWA and/or State standards.

DOE facilities purchase drinking water, provide water from their own supply, or use both sources. Those DOE facilities that collect, store, treat, or distribute water for human consumption to more than 25 persons for at least 60 days each year are considered to operate PWSs. Most DOE facilities with year-round work forces operate a non-transient NCWS. Several DOE facilities provide drinking water to their onsite employees and also to the adjoining communities. Those systems that serve residential customers would be considered to be CWSs.

The definition of PWS encompasses those DOE facilities that purchase water from a municipal or private supply. The GWR also includes requirements applicable to a "consecutive system," which is defined as, "[a] PWS that receives some or all of its finished water from one or more wholesale systems. Delivery may be through a direct connection or through the distribution system of one or more consecutive systems."

DOE facilities with questions concerning applicability or implementation issues, the relationship of new Subpart S to existing provisions of 40 CFR 141 or regulatory interpretations are encouraged to contact their appropriate drinking water regulatory agency.

MAJOR ELEMENTS OF THE GWR

The major four elements of the final GWR are described in the ensuing discussions.

Sanitary Surveys

The GWR requires States to conduct sanitary surveys³ on ground water systems. Sanitary surveys must

³ As used in Subpart S, a "sanitary survey", as conducted by the State, includes but is not limited to, an onsite review of the water source(s), facilities, equipment, operation, maintenance, and monitoring compliance of a PWS to evaluate the adequacy of the system, its sources and operations, and the distribution of safe drinking water.

evaluate the following elements, as applicable:

1. Source;
2. Treatment;
3. Distribution system;
4. Finished water storage;
5. Pumps, pump facilities, and controls;
6. Monitoring, reporting, and data verification;
7. System management and operation; and
8. Operator compliance with State requirements.

For CWSs, the initial sanitary surveys must be completed by December 31, 2012, and repeated at least once every three years (the GWR allows States to reduce the frequency for CWSs to once every five years for systems meeting certain specified performance criteria). For NCWSs, the initial surveys must be completed by December 31, 2014, and repeated at least once every five years.

If a State identifies significant deficiencies, it notifies the PWS and has the option of requiring corrective action.

Triggered Source Water Monitoring

Source water monitoring is an essential element of the GWR's approach for identifying those ground water systems that need corrective action. A ground water system is subject to "triggered source water monitoring" if it does not already provide treatment to achieve at least 99.99 percent (4-log) inactivation or removal of viruses before, or at, the first customer for each ground water source, and if it has yielded a total coliform-positive sample, as discussed below.

PWSs must currently conduct routine bacterial monitoring of ground water under EPA's 1989 [Total Coliform Rule](#) (TCR). If any total coliform sample tests positive, the PWS must collect additional samples from each ground water source feeding the system within 24 hours of receiving notification. These samples are tested for an indicator of fecal coliform. If any fecal coliform sample tests positive, the ground water system must collect five repeat samples at each ground water source that showed the positive result. States have the discretion to require the ground water system to begin corrective action at this point; however, if any repeat sample is positive, States must require corrective action.

Figure IV-2 in the preamble to the GWR ([71 FR 65591](#)) provides a user-friendly schematic on the triggered source water monitoring requirements. Exceptions to these requirements are identified in [40 CFR 141.402\(a\)\(5\)](#).

To reduce the burden on small systems, the GWR allows a ground water system serving 1,000 or fewer people to use a TCR repeat sample to simultaneously meet requirements of the TCR and the GWR if the State approves the use of *E. coli* as a fecal indicator for source water monitoring.

The GWR also provides States the flexibility to require

ground water systems to conduct assessment monitoring ([40 CFR 141.402\(b\)](#)).

Corrective Action

The GWR specifies the circumstances that require corrective action. If corrective action is triggered by either significant deficiencies found during the State's sanitary survey or by positive fecal coliform results during source water monitoring by the system, the ground water system must consult with the State within 30 days of notification or discovery and undertake actions to correct the problem. The ground water system must complete appropriate corrective actions within 120 days after becoming aware of the problem, or be in compliance with a plan and schedule approved by the State. Failure to do so constitutes a Treatment Technique Violation.

The ground water system must implement one or more of the following corrective action alternatives:

1. Correct all significant deficiencies (e.g., repairs to well pads and sanitary seals, repairs to piping tanks and treatment equipment, control of cross-connections);
2. Provide an alternate source of water (e.g., new well, connection to another PWS);
3. Eliminate the source of contamination (e.g., removal of point sources, relocation of pipelines and waste disposal, redirection of drainage or runoff, improvement or repair of the existing fencing or housing of the wellhead); or
4. Provide treatment that reliably achieves at least 4-log treatment of viruses (using inactivation, removal, or a State-approved combination of 4-log virus inactivation and removal) before or at the first customer for the ground water source.

Treatment technologies that can provide at least a 4-log treatment of viruses include the following:

1. Inactivation, with a sufficient disinfection concentration, and contact time, through disinfection with chlorine, chlorine dioxide, ozone, or through anodic oxidation.
2. Removal with membrane technologies with an absolute molecular weight cut-off, or an alternate parameter that describes the exclusion characteristics of the membrane, that can reliably achieve at least a 4-log removal of viruses.
3. Inactivation, removal or combination of inactivation and removal through alternative treatment technologies (e.g., ultraviolet (UV) radiation) approved by the State, if the alternative treatment technology, alone or in combination (e.g., UV with filtration, chlorination with filtration) can reliably provide at least 4-log treatment of viruses.

Figure IV-3 of the preamble to the GWR (71 FR 65601) contains a schematic of the corrective action treatment technique requirements.

Compliance Monitoring

To demonstrate that treatment is achieving its goals, the ground water system must monitor the system's performance.

Ground water systems that use chemical disinfection must monitor for, meet, and maintain a State-determined residual disinfectant concentration. Systems serving more than 3,300 customers must continuously monitor the residual disinfectant concentration. Systems serving 3,300 or fewer customers have the flexibility to use either continuous monitoring or grab sampling.

Ground water systems that use membrane filtration must maintain the integrity of the membrane and operate the membrane system in accordance with State-specified monitoring and compliance requirements.

Ground water systems that use State-approved alternative treatment technology must monitor and operate the alternative treatment in accordance with all compliance requirements that the State determines are necessary to demonstrate that at least 4-log treatment of viruses is achieved.

Reporting and Recordkeeping Requirements

In addition to the major elements described above, the GWR also addresses the types of reporting and recordkeeping required by ground water systems regulated under the Rule. Some of the reporting requirements must be made by the day following the reportable incident. Other actions must be reported within 30 days. Records must be kept for periods ranging from three to ten years, depending on the type of records.

BACKGROUND

The 1996 Amendments to the Safe Drinking Water Act (SDWA) directed EPA to promulgate regulations that require disinfection as a treatment technique for all PWSs, including surface water systems, and, as necessary, ground water systems (§1412(b)(8)). The GWR implements this provision by establishing a regulatory framework for determining which ground water systems are susceptible to fecal contamination. Ground water occurrence studies and recent outbreak data show that pathogenic viruses and bacteria can occur in PWSs that use ground water, and that people may become ill due to exposure to contaminated ground water. Most cases of waterborne disease are characterized by gastrointestinal symptoms (e.g., diarrhea, vomiting, etc.) that frequently are not serious in healthy individuals and rarely require medical treatment.

These same symptoms, however, are more serious and can be fatal for persons in sensitive subpopulations (such as young children, the elderly, and persons with compromised immune systems).

Viral and bacterial pathogens are present in human and animal feces, which can contaminate ground water sources, including drinking water wells. Contamination can result from failed septic systems or leaking sewer lines, for example, and can reach a ground water source by passing through soil or bedrock. Fecal contamination from the surface also may enter a drinking water well along its casing or through cracks if the well is not properly constructed, protected, or maintained.

EPA does not believe that all ground water systems are contaminated by fecal coliform bacteria; data indicate that only a small percentage of ground water systems are contaminated. However, EPA concluded that the severity of health impacts and the number of people potentially exposed to microbial pathogens in ground water warranted a regulatory response.

EPA published the proposed GWR in the May 10, 2000, Federal Register (65 FR 30194), and received comments on the proposed Rule from more than 250 organizations and entities. On March 27, 2006, EPA published a Notice of Data Availability in the Federal Register (71 FR 15105) to present additional studies that EPA was considering in conducting its economic analysis for the final Rule.

ADDITIONAL INFORMATION

Information on the GWR is available at: <http://www.epa.gov/safewater/disinfection/gwr/index.html>. Links to additional information on compliance issues, training, and questions and answers related to the Rule are also found on this website.

Questions of policy or questions requiring policy decisions will not be dealt with in HS-20 Information Briefs unless that policy has already been established through appropriate documentation. Please refer any questions concerning the subject material covered in this Information Brief to:

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