

**APPLICATION FOR GROUNDWATER  
COMPLIANCE**

**4-LOG REMOVAL OF VIRUSES APPLICATION FORM**

**INSTRUCTIONS**

The U.S. Environmental Protection Agency (EPA) published the Ground Water Rule in the Federal Register on November 08, 2006. The purpose of the rule is to provide increased protection against microbial pathogens in public water systems that use ground water sources. The EPA is particularly concerned about ground water systems that are susceptible to fecal contamination since disease-causing pathogens may be found in fecal contamination. Many Public Water Systems (PWS) in the State of Arizona apply a primary disinfectant to help eliminate these pathogens. In order to receive 4-Log Removal of Viruses credit from the Arizona Department of Environmental Quality (ADEQ, also referred to as the "Department" in this document), each system's processes will need to be reviewed and approved by the Department. In order for a PWS to receive this approval, each system will need to submit this application form and the required information to the Department.

In summary, EPA's proposed groundwater rule encourages drinking water systems using groundwater to achieve 4-log removal/inactivation of viruses; i.e. 99.99% removal/inactivation. Removal/inactivation occurs through filtration and/or disinfection. Achieving this level of treatment may or may not be difficult depending on the unique conditions of the system; i.e. storage time, water temperature, peak flow and chlorine concentration. Inactivation is a function of the disinfectant concentration and the amount of time the water spends in contact with the disinfectant before the first service connection. The steps contained in this application form will help determine whether 4-log removal of viruses can be achieved.

**GENERAL APPLICATION PROCESS**

1. Submit this form to the Arizona Department of Environmental Quality, Phoenix Office no later than October 1, 2009
2. There is no fee for this application submittal when the review is done by ADEQ.
3. Satisfy any deficiency requests arising from the Department's review of the submitted information.
4. Receive a determination from the Department regarding 4-log removal of viruses.

**GENERAL MONITORING REQUIREMENTS UPON APPROVAL OF 4-LOG REMOVAL**

All systems that use chemical disinfection must monitor the residual disinfectant concentration using analytical methods specified in EPA 141.74(a)(2) (Analytical and monitoring requirements) at a location approved by the Department. Each PWS is reminded of the following requirements that must be met upon approval of 4-log removal:

1. Systems that use chemical disinfection and serve more than 3,300 people must continuously monitor their disinfectant concentration. Systems must maintain the minimum disinfectant residual concentration determined by ADEQ. If continuous monitoring equipment fails, systems must take grab samples every 4 hours until the equipment is repaired. The equipment must be repaired within 14 days.
2. Systems that use chemical disinfection and serve 3,300 people or fewer must take daily grab samples or meet the continuous monitoring requirements described above for systems serving more than 3,300 people. If any daily grab sample measurement falls below the minimum state-required residual disinfectant concentration, the system must take follow-up samples every 4 hours until the residual is restored to the required level.
3. Systems using membrane filtration for 4-log treatment of viruses must monitor the membrane filtration process according to state-specified monitoring requirements and must operate the membrane filtration according to all state-specified compliance requirements. Reference can be made to EPA's Membrane Filtration Guidance Manual (November 2005 EPA 815-R-06-009) for information on membrane filtration system design and operation, membrane filtration testing requirements, and startup and implementation considerations.
4. Systems may use alternative treatment technologies (e.g., ultraviolet radiation [UV]) approved by the state, if the alternative treatment technology, alone or in combination (e.g., filtration with UV, filtration with chlorination) can reliably provide at least 4-log treatment of viruses. Systems must monitor the alternative treatment according to state-specified monitoring requirements, and must operate the alternative treatment according to compliance requirements established by the state.









