

## **Groundwater Public Water Systems that Utilize Chlorine, UV, or Ozone Treatment**

On December 1, 2009, public water systems (PWSs) using groundwater sources will be required to comply with provisions of the [Ground Water Rule](#) (GWR). PWSs that use groundwater sources and use chlorination, ozonation or UV treatment systems may be affected differently by the monitoring provisions of the GWR.

PWSs that can substantiate that treatment of their groundwater sources is maintained to at least 4-log (99.99%) inactivation and/or removal of viruses will be exempt from the monitoring provisions of the GWR. PWSs that use chlorine, ozone or UV treatment that does not provide 4-log inactivation will likely be required to conduct additional monitoring to ensure that the treatment is not masking microbial pathogen contamination.

If you believe that the treatment system that is installed for your groundwater source(s) will provide 4-log treatment of viruses please submit written documentation to the Drinking Water Section (DWS). If the DWS concurs you will receive a written acknowledgement exempting your PWS from the monitoring provisions of the GWR, provided the compliance monitoring requirements of the GWR for your treatment system(s) are maintained.

The DWS's "[Technical Guidelines for Determining Disinfection "CT" When Using Chlorine for Chlorination of Groundwater Sources of Supply](#)" should be utilized as guidance in calculating and documenting the log removal of chlorination treatment system(s). The DWS believes a CT value of 6 is necessary under normal circumstances to achieve 4-log treatment of viruses. If you believe that 4-log treatment can be achieved with a lower CT at your PWS, you may provide evidence supporting that. For ozone systems, a minimum CT of 1.0 is necessary.

If you wish to submit data substantiating that a membrane filtration unit, UV disinfection system, or combination of treatment systems provides at least 4-logs of virus treatment, you must minimally provide the following as evidence:

- Validation of the log treatment indicated for a treatment unit. Acceptable validation methods include, but are not limited to, verification through industry, state or federal studies, including USEPA's ETV program or an actual in-situ validation conducted by the PWS.
- Verification that the UV dose can be reliably delivered with the site specific conditions of the system (if applicable), including water chemistry, flow rate changes, redundancy, backup power, etc.
- In the absence of DWS issued compliance monitoring requirements, a compliance monitoring plan that assures that the treatment unit(s) is/are being maintained to 4-log treatment of viruses.

Treatment systems installed in series can be approved provided that the sum total of treatment provides 4-log (e.g. UV+chlorine, membrane filtration+ UV, UV+UV+UV). There are currently no known single standalone UV units that will provide 4-log inactivation of viruses.

If you do not apply for and receive written approval from the DWS that your PWS achieves 4-log treatment prior to December 1, 2009, you will be required to comply with the monitoring provisions of the GWR until such time as DWS approval is granted.

Groundwater systems may wish to upgrade their existing treatment systems to provide 4-log treatment. An [application](#) for modifications or upgrades to treatment systems must be approved by the DWS prior to installation in accordance with Section 19-13-B102(d)(2) of the Regulations of Connecticut State Agencies.

If you have any questions, please contact Eric McPhee at [eric.mcphee@ct.gov](mailto:eric.mcphee@ct.gov) or 860.509.7333.