History

The Surface Water Treatment Rule, which was promulgated by EPA in 1989, recognized four typical filtration methods used in treatment plants at the time to help remove *Giardia Lamblia* from the water: Conventional Filtration, Direct Filtration, Slow Sand Filtration, and Diatomaceous Earth Filtration. The rule established turbidity treatment technique standards for these filtration technologies, which are further defined in the rules.

The rule introduced the flexibility to the State to allow for "other filtration technologies" to be approved for use in the treatment process. Requirements in the rule requires the public water system to demonstrate, through pilot studies, or other means, that the alternative filtration technology, in conjunction with disinfection treatment, will consistently achieves 99.9% removal /inactivation of *Giardia Lamblia* and 99.99% removal/inactivation of viruses.

In December 1998 and January 2002, EPA promulgated the Interim Enhanced Surface Water Treatment Rule and the Long Term 1 Enhanced Surface Water Treatment Rule, which further defined the requirements of using alternative filtration, adding the requirement that the pilot study, or other means, demonstrates that the technology can consistently remove 99% of the Cryptosporidium oocysts. The rules further direct the State to establish a 95th percentile turbidity treatment technique standard and a maximum turbidity treatment technique standard based on the pilot study, or other means. These measurements are specified to be conducted on the combined filter effluent. The measurements are to be taken in accordance with the Surface Water Treatment rule, which is a measurement at least once every four hours, or more frequently. The approved primacy applications for these two rules identified three methods to establish the turbidity standards for other filtration technologies: 1) the standards established for the alternative technology where it is being used in another State; 2) pilot studies; or 3) NSF (National Sanitation Foundation) ETV (Environmental Technology Verification) study results.

Pilot studies have been routinely required on new construction permit applications that have proposed other filtration technologies, with turbidity results well below the standards for conventional/direct filtration methods (1 NTU maximum and 0.3 NTU 95% of the time). OEHS/EED believed that since conventional/direct filtration had the most stringent turbidity standards; these same standards should be adequate for other filtration technologies.

In January 2006, EPA promulgated the Long Term 2 Enhanced Surface Water Treatment Rule (or Enhanced Treatment for Cryptosporidium). Systems that are required to adopt procedures or treatment to address enhanced treatment have the option of using membrane filtration. If a system elects to use membrane filtration for this purpose, they are required to monitor each membrane unit continuously (15 minute readings) and if there are two consecutive readings over 0.15 NTU, the public water system is required to take the unit out of service and conduct a direct integrity test. The justification for these standards in EPA's guidance is that values higher than these values indicate a high likelihood of a breach

in the filter, potentially allowing microbial contaminants to enter the distribution system. This justification has caused OEHS/EED to re-evaluate the use of conventional/direct filtration standards for other filtration technologies.

PROCEDURE

OEHS/EED will establish a maximum turbidity standard of 0.15 NTU and a 95th percentile value of 0.10 NTU as the standard for other treatment technologies, if the treatment technology is not used in conjunction with conventional, direct, diatomaceous earth, or slow sand filtration methods. If the demonstration method submitted (pilot, NSF ETV, or other state standard) indicates lower standards are more appropriate, OEHS/EED may impose a lower value.

Existing “other filtration technologies”, beginning the first day of the month following the establishment of this procedure, will be required to meet the 0.15 NTU and 0.10 (95th percentile) standards.

References:

Surface Water Treatment Rule
Interim Enhanced Surface Water Treatment Rule
Long Term 1 Enhanced Surface Water Treatment Rule
Long Term 2 Enhanced Surface Water Treatment Rule

History:
Attachment: