2003

Potential Uses of Riverbank Filtration for Regulatory Compliance

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Lunch Presentation

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RBF may have its most general application for systems seeking compliance with the LT2ESWTR. On August 11, 2003, the USEPA proposed the LT2ESWTR and included provisions by which RBF could be used as one of the compliance options for providing *Cryptosporidium* removal credits (USEPA, 2003). While the USEPA has previously recognized (through guidance implementation decisions) that RBF is a technology that can achieve pathogen removal, the LT2ESWTR is the first United States drinking-water regulation that specifically recognizes RBF as a compliance technology option.

Under the proposed LT2ESWTR, filtered systems must monitor source water for *Cryptosporidium* to determine what source-water bin concentration category it belongs in and whether additional treatment is required. As part of this determination, the USEPA provides a "toolbox" of technologies by which systems can assess their total removal/inactivation credits for *Cryptosporidium*. The proposed LT2ESWTR recognizes RBF as a "toolbox" pretreatment technique that can provide a system 0.5- or 1.0-log additional pretreatment credit, if it meets specified design criteria and monitoring criteria.

For RBF to be eligible for credit as a pretreatment technique, the following proposed criteria must be met:

- Wells must be drilled in an unconsolidated, predominantly sandy aquifer, as determined by grain-size analysis of recovered core material — the recovered core must contain greater than 10-percent fine-grained material (grains less than 1.0-millimeter diameter) in at least 90 percent of its length.
- Wells must be located at least 25 ft (in any direction) from the surface-water source to be eligible for 0.5-log credit; wells located at least 50 ft from surface water are eligible for 1.0-log credit.
- The wellhead must be continuously monitored for turbidity to ensure that no system failure is occurring. If the monthly average of daily maximum turbidity values exceeds 1 ntu, the system must report this finding to the State. The system must also conduct an assessment to determine the cause of high turbidity levels in the well and consult with the State to determine whether the previously allowed credit is still appropriate.

Systems using RBF as pretreatment to a filtration plant at the time that the system is required to monitor for *Cryptosporidium* must sample the well effluent for the purpose of determining the bin

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THE SECOND INTERNATIONAL RIVERBANK FILTRATION CONFERENCE: RIVERBANK FILTRATION: THE FUTURE IS NOW! PROGRAM & ABSTRACTS, Cincinnati, Ohio, September 16-19, 2003.
Edited by Gina Melin. Published by the National Water Research Institute.

classification. Where bin classification is based on monitoring the well effluent, systems are not eligible to receive additional credit for RBF. The rationale for the above proposed criteria and opportunity for public comment are described in detail in the Federal Register (68FR47692) and are available on the web at http://www.regulations.gov/fredpdfs/03-18295.pdf.

RBF also provides the opportunity for directly reducing organic DBP precursor levels or indirectly facilitating the application of advanced precursor removal technologies, such as nanofiltration. The USEPA is proposing the Stage 2 Disinfection By-Product Regulation to mitigate concerns for the potential risk of developmental and reproductive effects from DBPs. Since the compliance dates of the LT2ESWTR will coincide with those of the Stage 2 Disinfection By-Product Regulation, there may be opportunities for utilities to use RBF for helping to achieve compliance with both regulations.

The simultaneous reduction of other regulated contaminants by irreversible adsorption, biodegradation, dilution with groundwater, or attenuation mechanisms is also possible with RBF. This is clearly a site-specific issue whose success cannot be assumed without adequate testing/monitoring.

REFERENCE

USEPA (2003). *National Primary Drinking Water Regulations: Long Term 2 Enhanced Surface Water Treatment Rule; Propose Rule*, Federal Register, 68(154): 47,691-47,696.

STIG REGLI is an Environmental Engineer for the Office of Ground Water and Drinking Water of the United States Environmental Protection Agency. He has been with the United States Environmental Protection Agency since 1979 and is involved with developing national drinking-water regulations for public water systems. His major focus has been as a Regulation Manager (1985 to 1996) and, more recently, as a Senior Science Advisor pertinent to the control of pathogens and disinfection byproducts. He has also been on extended leave to work on drinking-water related projects in Somalia and Thailand. Prior to working at the United States Environmental Protection Agency, he taught environmental engineering courses as a Peace Corps volunteer at Kabul University in Kabul, Afghanistan. Regli received both a B.S. in Mechanical Engineering and an M.S. in Civil Engineering from Duke University.