

## NATIONAL WATER RESEARCH INSTITUTE

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### **THIRD EDITION OF “UV GUIDELINES” PROVIDES UPDATED PROTOCOL FOR TESTING AND VALIDATING UV PERFORMANCE**

FOUNTAIN VALLEY, Calif. – The National Water Research Institute (NWRI) is pleased to announce the publication of a third edition to the *Ultraviolet Disinfection Guidelines for Drinking Water and Water Reuse*.

The purpose of the “UV Guidelines” is to provide regulatory agencies and water and wastewater utilities with a common basis for evaluating and implementing ultraviolet (UV) disinfection, which is a water treatment technology that can inactivate many waterborne pathogens, such as viruses, bacteria, and parasites like *Cryptosporidium* and *Giardia*. Unlike chemically based disinfection options, UV disinfection does not produce potentially harmful disinfection byproducts during the water disinfection process.

The announcement was made by Jeff Mosher, Executive Director of NWRI, at the “IUVA 2012 Americas Conference” held by the International Ultraviolet Association (IUVA) in Washington, D.C. “Because of its advantages,” said Mosher, “demand for UV is growing, based in part on the use of recycled water to meet water supply needs. The UV Guidelines are the most commonly used reference by regulators, water and wastewater agencies, design engineers, and equipment manufacturers to ensure the efficacy of UV installations.”

The UV Guidelines were originally prepared in 2000 by a team water industry experts that included university researchers, state and federal regulators, and consultants from the U.S. and abroad.

The revisions in the Third Edition of the UV Guidelines reflect experience gained from the application of the guidelines over the years. Specifically, the “Protocols” section of the guidelines was updated for the following purposes:

- Provide a standardized protocol for conducting “spot-check” performance MS-2 based viral bioassays to validate the installed performance of full-scale UV disinfection systems.
- Standardize the assignment of UV dose when conducting MS-2 based viral assays by making use of a standard MS-2 dose-response relationship.

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Key revisions include:

- All reclamation systems must undergo commissioning tests that demonstrate disinfection performance is consistent with design intent.
- Velocity profiles have been eliminated as an option for transferring pilot data to full-scale facility design.
- On-site MS-2 based viral assays are used for both the validation and commissioning test.
- A standard MS-2 dose-response curve is used to derive the reduction equivalent dose.
- The design equation is based on the lower 75-percent prediction interval for reclamation systems. The lower 90-percent prediction interval is used for drinking water systems.
- Commissioning tests will require seven out of eight on-site measurements exceeding the operational design equation.
- The addition of an appendix to illustrate the computations involved in the application and evaluation of UV disinfection systems.

The third edition of the UV Guidelines was revised by Robert W. Emerick, Ph.D., P.E., of Stantec Consulting Services, who was responsible for the first permitted unfiltered drinking water UV disinfection facility in the U.S. and continues to regularly design and troubleshoot reclamation-based UV disinfection systems, and George Tchobanoglous, Ph.D., P.E., NAE, Professor Emeritus at the University of California, Davis, who has authored or coauthored over 350 publications on water and wastewater treatment and solid waste management, including 13 textbooks and five engineering reference books.

The UV Guidelines are available to download at [www.nwri-usa.org/uvguidelines.htm](http://www.nwri-usa.org/uvguidelines.htm).

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*The National Water Research Institute (NWRI) was founded in 1991 by a group of Southern California water agencies in partnership with the Joan Irvine Smith and Athalie R. Clarke Foundation to promote the protection, maintenance, and restoration of water supplies and to protect the freshwater and marine environments through the development of cooperative research work. NWRI's member agencies include Inland Empire Utilities Agency, Irvine Ranch Water District, Los Angeles Department of Water and Power, Orange County Sanitation District, Orange County Water District, and West Basin Municipal Water District.*

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