

A Conversation between NSF and IUVA about NSF's UV Standards

IUVA asked NSF International if they would like to provide an article about UV standards, perhaps via an interview for the quarterly newsletter. The following are NSF's responses to IUVA's questions.

Why did NSF decide that a UV protocol was needed? Why is the NSF protocol needed in addition to the UVDGM?

Small system drinking water and recreational water stakeholders wanted NSF to develop a very simple well-defined protocol with less room for interpretation than is in the Ultraviolet Disinfection Guidance Manual (UVDGM-2006). During 2008 through 2009, NSF received many calls from drinking water regulators and engineers to consider involvement in the oversight and review of existing validation reports for drinking water applications. There appeared to be a need for a very simplified single sensor set point approach in validation with clarification on what are the mandatory requirements.

During the summer of 2005 and 2006 there were numerous outbreaks of *Cryptosporidiosis* in recreational spray water parks and public swimming pools. Some of the facilities were treated using UV. Thus the recreational water treatment community of regulators and industry requested the Joint Committee for NSF Standard 50 to change its UV reactor performance test requirements to be consistent with the EPA drinking water regulations. The Joint Committee took on the task of working with NSF to develop a testing protocol consistent with the EPA's UVDGM. The Joint Committee agreed that the approach suggested for drinking water through the ETV process was also acceptable for NSF 50.

NSF also received requests for international UV manufacturers to test their equipment to meet European criteria such as the Norwegian Institute of Public Health. NSF also received a request to meet several state requirements for a 40 RED using MS2, so the protocol also includes a way to validate to a specific dose rather than validate for the purpose of log reduction of *Cryptosporidium* or viruses.

NSF under the ETV Program began assembling a group of technical experts to develop a simplified set point control strategy protocol for validating UV reactors. The

purpose was to meet the needs of the drinking water treatment community, especially small systems and international requirements, as well as the NSF Standard 50 Joint Committee mandate.

Who will use the NSF protocol?

We expect that all stakeholders will use or benefit from its use. However, small drinking water systems and recreational water facilities like spray parks and pools will be the primary beneficiaries. With the protocol being used for drinking water and recreational water treatment applications, there is expected to be cost savings for the UV industry by having one protocol for validation to meet the requirements for NSF 50 and small drinking water systems. In addition, the protocol is expected to also meet international agency requirements such as for the Norwegian Institute of Public Health.

Is the protocol something that will continue to evolve through new versions?

The ETV as well as NSF Protocol and Standards processes require periodic reviews by stakeholders to update and improve the testing protocol or standard. For NSF Standards, there is an annual meeting of the Joint Committee that reviews updates to the standard, which includes testing procedures. For ETV and NSF Protocols, the review is done through email and mail, on an as-needed based on comments received by stakeholders. The ETV and NSF protocols are typically reviewed and updated once per year. Anyone can comment on any protocol or standard at any time. However, the comments are typically addressed once per year for efficiency.

As the state of science and engineering progresses and stakeholders have other performance needs, the protocol and standards evolve. As an accredited standards body, NSF expects these documents to be continually improved by stakeholders to meet their needs through building a consensus of what should be included in these protocols and standards. The UVDGM is now six years old. Both the science and technologies have changed in this period. So have the needs of stakeholders. ETV Protocols and NSF Standards provide a mechanism to address those needs and advances.

Is it written for manufacturers, utilities and design engineers, others or all of these groups?

The protocol is written for all UV stakeholders who need some standardized way of testing UV performance.

Is there a size (flow capacity) system that NSF is focused on?

The protocol is based on the single sensor set point control strategy, which is primarily for small systems. In general we assumed the protocol would be used to validate reactors for small drinking water systems and recreational water treatment (pools and spray parks) applications. An estimate of about 1 MGD seemed like a reasonable flow capacity. For larger flow rate applications, the use of the UVDGM-2006 by industry seemed to be working well as is, with no further need for NSF to create another protocol specific to larger systems.

How is it different from the UVDGM?

The UVDGM-2006 allows for considerable flexibility in validation testing and planning. This is the strength of the UVDGM. However, such flexibility can intrinsically create a lack of uniformity in testing. The ETV Protocol is not “different” as much as it is a subset of the UVDGM. It defines certain aspects of testing that otherwise are left to interpretation. It also can be used to validate to a specific dose versus Cryptosporidium and virus credits.

What would NSF like IUVA members to know about their process, protocol and role?

NSF has six standards and protocols that address UV performance and several under development. These standards and protocols cover USA and international requirements for the UV treatment of water from residential point of use, emergency treatment, public drinking water and waste water applications. NSF needs the input of IUVA members in the development and improvement all of these standards and protocols to assure they are current and meet stakeholder needs.

Contact person at NSF for these issues:

C. Bruce Bartley
Manager, Drinking Water Equipment Performance Program
NSF International
789 Dixboro Road
Ann Arbor, Michigan 48105
Tel: 734-769-5148 Fax: 734-827-7160

Paul Swaim and Karl Linden developed the questions for this interview.

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