
Toward National Validation Guidelines for Water Recycling in Australia

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Goals of the Workshop

- There is a need to evaluate new technologies for water recycling
 - Communicate to a diverse set of stakeholders
 - Public health protection
 - Present National and International perspectives for validation of water treatment technologies
 - Engage regulators, utilities, the private sector, and academics
 - Engage attendees to participate in the process
 - Work toward an acceptable framework for validation
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Overview of Workshop

- Short Presentations to set the stage (~5 min each)
 - International Perspective – US case of UV validation
 - The view from the Australia Water Recycling Centre of Excellence – The drivers for validation
 - The National Validation Framework Overview
 - Perspective from a water utility – is validation a help or hindrance?
 - Industry and consultant experiences with validation
 - How regulators view the validation process
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Overview of Workshop

- Break-out groups to discuss key topics (30 minutes)
 - Split the room up into 3 groups
 - Each group takes one topic

 - Topics
 - a) What are the elements of an effective validation protocol?
 - b) Identify the stakeholders and their likely perspectives/issues on validation.
 - c) What do you not want to see in a validation protocol?
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Overview of Workshop

- Groups Report Back (15 minutes)
 - Each group gets 5 minutes to report on their discussions

- Questions, wrap up and summary (5 min)
 - How the input from workshop be used

Lessons from the

US EPA UV Disinfection Validation Process

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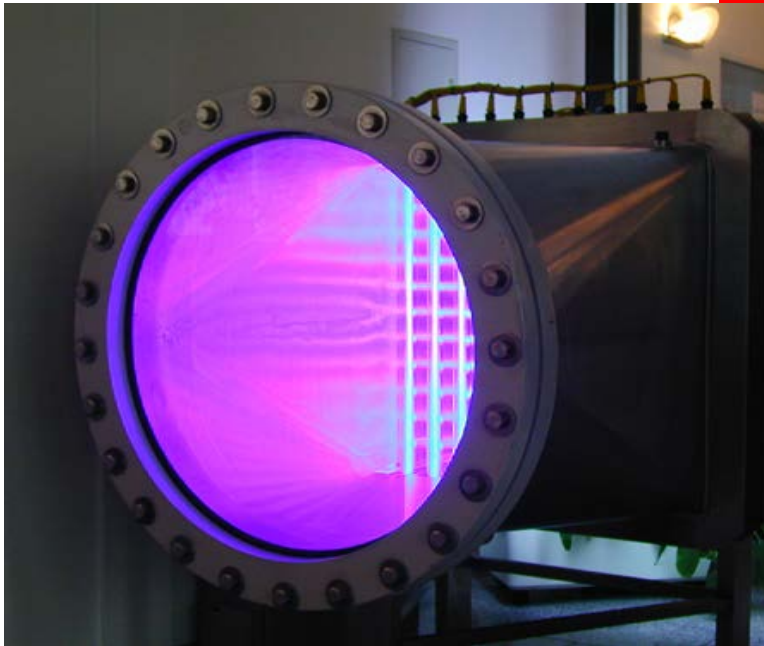
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Driver: Availability of UV Disinfection Is a Fundamental Premise of New Regulations

EPA recognized that UV disinfection is a new technology to the water industry and that documents needed to be developed to bridge the knowledge gap

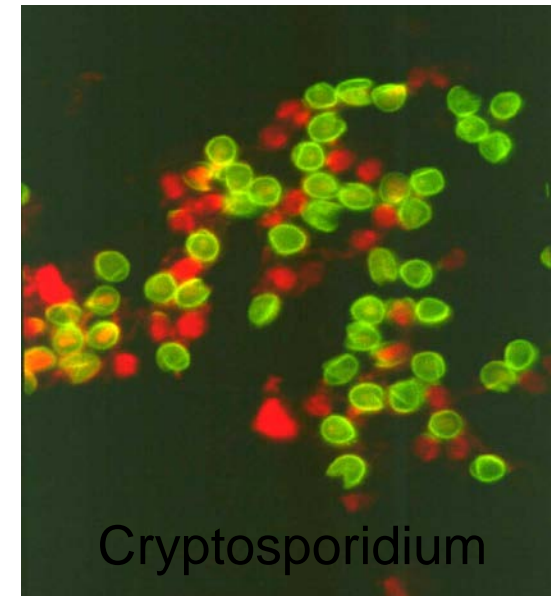


- UV dose tables
 - Validation protocol**
 - Monitoring requirements
 - UV disinfection guidance manual
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Demand: Water Reuse schemes require application of advanced technologies operating failsafe 24/7

- Public health protection is paramount
- How do we know if technologies are performing?
- New and existing technologies need to be covered

Utilities **and** Regulators need guidance for new technology



To get comfortable with UV:
**EPA Developed UV Disinfection Specific
Requirements and Recommendations**

UV Doses

**UV Reactor
Validation**

**Off-specification
Operation**

O & M

What is Validation?

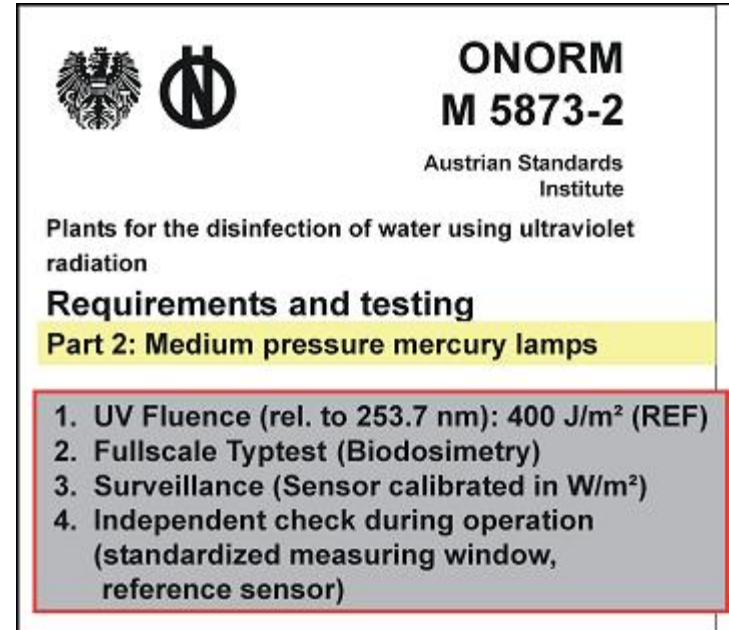
- UV system is designed to achieve a given level of disinfection performance
 - under specific conditions

 - Must verify claims made on performance
 - evaluate the reactor performance

 - Need to evaluate UV dose delivery and dose monitoring
 - monitoring provides the basis for assigning disinfection credit during operation
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Existing UV Validation Protocols

- German DVGW
- Austrian ONORM
- NSF Standard 55 (POE/POU)
- NWRI/AWWARF UV Guidelines
- US EPA Guidance Manual



LT2: “Log credit based on validated UV dose in relation to UV dose table; reactor validation testing required to establish UV dose and associated operating conditions”

Principal Elements of a Validation Protocol

- Documentation of the treatment technology and its components to ensure it matches the validated system
 - Measurement of performance via challenge testing
 - Correlation of the challenge test results with on-line monitoring
 - Assessment of uncertainty and bias in the interpretation of results
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Components of the USEPA UV Validation Protocol

Microbial Methods

UV Sensor
Tests

Biodosimetry
Procedures

Data Analysis

Calculation of
Safety Factors

Determining
Operating Setpoints

Determination of
Log Credit

Inlet/Outlet Hydraulics

On-site vs. Off-site Validation

The importance of a **Validation Facility**

- The USA has two UV Disinfection Validation Facilities
 - NY State UV Validation and Research Center
 - Portland UV Disinfection Validation Center
- Validation can also take place on-site at water utility
 - Pros and cons of each approach

NY UV Validation Facility (1)



NY UV Validation Facility (2)



Workshop Presenters

- The view from the Australia Water Recycling Centre of Excellence (Mark O'Donahue, CEO, AWRCoE)
 - The National Validation Framework Overview (Cedric Robillot, NatVal2.2 Program Manager)
 - Perspective from a water utility – is validation a help or hindrance? (Judy Blackbeard, Melbourne Water)
 - Industry and consultant experiences with validation (Kurt Dahl, Permeate Partners)
 - How regulators view the validation process (Luc Richard, Victoria Health)
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