

From: Vincent, Bob G <Bob.Vincent@flhealth.gov>
Sent: Sunday, March 24, 2024 9:49 PM
To: Madani, Mo <Mo.Madani@myfloridalicense.com>
Cc: bob.vincent@flhealth.gov
Subject: SW-FBC-B - Ch. 4-Glitch information for the Florida Building Commission meeting 4/16/2024

[NOTICE] This message comes from a system outside of DBPR. Please exercise caution when clicking on links and/or providing sensitive information. If you have concerns, please contact your Knowledge Champion or the DBPR Helpdesk.

Good morning Mo,

The following information by Florida Department of Health (FDOH) and the attached statement by a pool UV disinfection equipment manufacturer are provided for the Florida Building Commission's consideration.

I will represent the FDOH at the April 16, 2024 meeting to briefly inform the Commission of the glitches in #3 and #8.

SW-FBC-B – Ch.4- Glitch #3

The following FBC 2023 pool rules signage now allows movable deck furniture of a specified material to be placed **anywhere** in the pool:

454.1.2.3.5- 9. If the pool includes a sun shelf or a zero depth entry area, "DO NOT PLACE FURNITURE IN POOL." Not required when all movable furniture on the deck or in the pool is entirely made from UV-resistant, inert plastic.

This following revision proposed by the FDOH in 2023 did not pass muster of the Commission in March 2023.

454.1.2.6- 4. Furniture that is non-corrosive, will not introduce contaminants into the pool water, and is acceptable to the health department access and cleaning plan may be placed only on sun shelf or zero depth entry in a pool. Means shall be taken to protect finish surfacing of the pool shell that is in contact with the furniture. Furniture shall never be placed upon or over nor obstruct the view or function of any safety markings, markers or treated water inlet returns.

Current FBC Section 454.1.2.6: The pool water area shall be unobstructed by any type structure unless justified by engineering design as a part of the recirculation system. Engineering design

and material specifications shall show that such structures will not endanger the pool patron, can be maintained in a sanitary condition and will not create a problem for sanitary maintenance of any part of the pool, pool water, or pool facilities. Structures in accord with the above shall not be located in a diving bowl area or within 15 feet of any pool wall. Exceptions: 1. ,2. ,3.

Current FBC Section 454.1.2.8.3 Access to sun shelf: For the purposes of Section 454.1.2.5, a sun shelf area shall be considered an entrance to or exit from the pool. ...; thus the 8th edition furniture allowance revision for an entire sun shelf is a violation of FBC Section 454.1.2.5 Access: All pools shall have a means of access every 75 feet of pool perimeter with a minimum of two, located so as to serve both ends of the pool.

FDOH requests that the following addition be placed into section FBC 454.1.2.6 as exception #4; to assure only that safety markers and treated water return inlets are visible and functional all day / every day the pool is in operation, and so a narrow pathway between chairs and lounges exist for patrons to enter and exit these areas:

Proposed addition to sustain safety and sanitation:

Furniture for seating may be placed on a sun shelf and/or zero depth entry area with separation of at least 1.5-feet between chairs, lounges; and said furniture cannot be placed on a floor return inlet, sun shelf edge marker, water depth marker, nor on a no-diving marker.

SW-FBC-B – Ch. 4- Glitch #8

The 2023 FBC now allows for **Supplemental** Ultraviolet light (UV) disinfection of Interactive Water Features (aka-splashpads) in FBC section 454.1.9.8.6.2 .

Yet **Supplemental** UV disinfection is prohibited by FBC section 454.1.9.8.6.1 with its reference to FBC section 454.1.6.5.16.6.; specifically subsection 4. where the FBC requires: a constant validated 40 mJ/cm² dosage and third party validation to US EPA UV disinfection criteria.

Also, **Supplemental** UV disinfection equipment does not meet the FBC incorporated reference ANSI/NSF-50 2020 criteria

Only **Secondary** UV disinfection devices achieve both requirements in subsection 4.

Therefore, Secondary UV disinfection should replace the Supplemental UV disinfection allowed for design options 1 & 2 in FBC section 454.1.9.8.6.2 .

Excerpts from FBC-referenced 2020 ANSI/NSF-50 standard for UV Disinfection Equipment:

“15.5 Performance indication- A **supplemental** UV system shall be provided with an effective means to alert the user when a component of this equipment is not operating. A **secondary** UV system shall incorporate on the control panel a constantly visible readout of the actual flow (in US GPM), the actual calculated dose (in millijoules/cm²) and the actual lamp intensity (in w/m²). It is acceptable for the display to constantly cycle through the parameters. The cycle duration shall not take more than 15 s.”

“15.8 Disinfection efficacy- Ultraviolet light process equipment designed for **supplemental** disinfection shall demonstrate a 3 log (99.9%) or greater inactivation of influent bacteria when tested according to Section N-8.1. Ultraviolet light process equipment designed for **secondary** disinfection shall demonstrate a 3 log (99.9%) or greater inactivation of *C. parvum* when tested and evaluated according to Section 15.18 and is exempt from Section N-8.1 testing if during secondary validation the lamp intensity (per Section 15.5) is equal to or greater than the lamp intensity after the unit has completed life testing. Section N-8.1 shall be required if the dose is less.”

Excerpts from U.S. Centers for Disease Control’s 2023 Model Aquatic Health Code:

<https://www.cdc.gov/mahc/index.html>

“4.7.3.3.1.2A Required Facilities-The new construction or SUBSTANTIAL ALTERATION of the following INCREASED RISK AQUATIC VENUES shall be required to use a **SECONDARY TREATMENT** after adoption of this CODE:

1) AQUATIC VENUES designed primarily for children under 5 years old, such as

a. Wading pools

b. INTERACTIVE WATER PLAY VENUES with no standing water, and

2) Therapy pools.

4.7.3.3.2A Log Inactivation and Oocyst Reduction

4.7.3.3.2.1A Log Inactivation- **SECONDARY TREATMENT** shall be designed to achieve a minimum 3-log (99.9%) reduction in the number of infective *Cryptosporidium* OOCYSTS per pass through the **SECONDARY TREATMENT** for INTERACTIVE WATER PLAY AQUATIC VENUES and a minimum 2-log (99%) reduction per pass for all other AQUATIC VENUES. Each **SECONDARY TREATMENT** may be composed of multiple treatment processes or steps that result in the total required reduction in the number of infective *Cryptosporidium* OOCYSTS per pass through the **SECONDARY TREATMENT**.”

FDOH Epidemiology Section data summary:

Cryptosporidium is transmitted via the fecal-oral-route. When a person ingests food or water that is contaminated with oocysts, they can become ill. Between 2016 and 2022, Florida reported an average of 519 cases per year. While most cases are sporadic, disease outbreaks have been associated with recreational water in aquatic venues. A waterborne outbreak of *cryptosporidiosis* is defined as two or more persons with the same traceable water exposure, either by ingestion or contact with said water source. Factors such as swimming while ill or while infectious have contributed to disease outbreaks at aquatic venues in Florida. *Cryptosporidium* oocysts are resistant to normal concentrations of chemical disinfectants, including chlorine, making the parasite a particular concern for treated recreational water. Additionally, *Cryptosporidium* has a low infectious dose and can survive for days in properly chlorinated water. In Florida, the number of aquatic waterborne disease outbreaks of *Cryptosporidium* decreased from 17 outbreaks reported in 2009-2015 to three outbreaks from 2016-2023. During the two periods, multiple aquatic venues were found to be the source of the disease outbreak, with on splashpad/ interactive water feature during each time period. These outbreaks accounted for 26 cases of

Cryptosporidium. Sixteen (62%) of the cases were 5 years-old, or younger. Florida reported a total of 17 recreational waterborne disease outbreaks due to *Cryptosporidium* from 2009-2015. There were 215 cases associated with these outbreaks. Younger people were more effected, 56.7% of cases were 9-years old or younger. Florida has nearly 43,000 regulated public swimming pools, of which fewer than 80 (<0.2%) are splashpads/interactive water features. To inactivate *Cryptosporidium* in an aquatic venue with chlorine disinfection without stabilizer after a fecal incident, it is recommended that free chlorine concentration be held at 20 ppm for 12.75 hours or at 10 ppm for 25.5 hours. Recommendations to aquatic venue operators include proper procedures for hyperchlorination following a fecal incident and installing secondary-certified UV equipment capable of a single pass 3-log reduction of *Cryptosporidium* oocysts.

Reported outbreaks of *cryptosporidiosis* in Florida from 2009-2015 and from 2016-2023 were acquired from the Florida Complaint and Outbreak Reporting System, information from Merlin, Florida's reportable disease database, and from outbreak reports.

Kind Regards, Bob

Bob Vincent, RS, MPA, Environmental Administrator,
Florida Dept of Health, Division of Disease Control and Health Protection
Bureau of Environmental Health, Water Programs
Tallahassee, FL O 850.245.4578, C 850.251.7510, F 850.487.0864
Webpage: [Healthy Environments | Florida Department of Health \(floridahealth.gov\)](https://www.floridahealth.gov/healthy-environments)

Note: Florida has a very broad public records law. Most written communications to or from state officials regarding state business are public records available to the public and media upon request. Your e-mail communications may therefore be subject to public disclosure.



3/21/24

To whom it may concern:

Regarding current NSF testing standards that apply to the use of ultraviolet disinfection generators in recreational water applications, there are two that currently represent the industry, Supplemental Disinfection and Secondary Disinfection. These standards are described by NSF as follows:

<p>NSF 50 for Supplemental Disinfection</p>	<p><i>Product has met the requirements of NSF/ANSI 50, Annex H.1: Disinfection Efficacy for the ≥ 3 log reduction of <i>Enterococcus faecium</i> [ATCC #6569] and <i>Pseudomonas aeruginosa</i> [ATCC #27313]. This product is intended for supplemental disinfection and should be used with registered or approved disinfection chemicals to impart residual concentrations in accordance with state and local regulations.</i></p>
<p>NSF 50 for Secondary Disinfection</p>	<p><i>This product has been tested to confirm a minimum inactivation equivalent of 3 log (99.9%) cryptosporidium parvum in accordance with NSF 50 and the US EPA UV DGM. Consult the manufacturer's Installation and Operating Instructions for the performance operating parameters. This product has met the requirements of NSF/ANSI 50, Annex H.1: Disinfection Efficacy for the \geq minimum of a 3 log (99.9%) reduction of <i>Enterococcus faecium</i> [ATCC #6569] and <i>Pseudomonas aeruginosa</i> [ATCC #27313]. This product is intended for secondary disinfection and should be used with registered or approved disinfection chemicals to impart residual concentrations in accordance with state and local regulations.</i></p>

The important consideration when reviewing the two standards, is understanding how the testing is completed.

- Supplemental Disinfection. This standard has no mechanism for testing the effective inactivation of cryptosporidium. This test is the original test standard offered through NSF for UV Disinfection and tests a UV generator’s performance based on 6 turnovers of the pool.
- Secondary Disinfection. This standard directly tests the UV generator’s potential of inactivating cryptosporidium however, the test allows for only a single pass through the UV generator to accomplish this feat. This is a much more difficult test to pass and is appropriately viewed as the preferred standard to ensure full protection.

Armed with this knowledge, when rating a UV disinfection system for use in spray features and spray parks, it is crucial to understand that systems rated for Supplemental Disinfection only will be inferior to those rated for Secondary Disinfection and can present the risk of failing to protect patrons from various chlorine tolerant microorganisms that threaten today’s aquatics facilities, such as cryptosporidium.

As such, it is my opinion that the verbiage in section 454.1.6.5.16.6 can benefit from review. Specifically with points 3 and points 4 as envisioned on the following page:



3. UV equipment must be certified for secondary disinfection per NSF 50-2020. Secondary certification is defined by NSF as follows:

This product has been tested to confirm a minimum inactivation equivalent of 3 log (99.9%) cryptosporidium parvum in accordance with NSF 50 and the US EPA UV DGM. Consult the manufacturer's Installation and Operating Instructions for the performance operating parameters. This product has met the requirements of NSF/ANSI 50, Annex H.1: Disinfection Efficacy for the \geq minimum of a 3 log (99.9%) reduction of Enterococcus faecium [ATCC #6569] and Pseudomonas aeruginosa [ATCC #27313]. This product is intended for secondary disinfection and should be used with registered or approved disinfection chemicals to impart residual concentrations in accordance with state and local regulations.

4. UV equipment that is not certified for Secondary Disinfection per NSF 50–2020 shall alternatively be validated via qualified third party in accordance with the USEPA Ultraviolet Disinfectant Guidance Manual dated November 2006, publication number EPA 815-R-06-007. The validation shall list the minimum effective RED (reduction equivalent dose) to provide a 3-log reduction of cryptosporidium. The UV equipment must be capable of maintaining this minimum UV Dose until end of lamp life (EOLL).

Commenting on the absence of the 40mj minimum UV Dose in point number 4, 40mj is a baseline UV Dose target when validating UV systems per the German standard DVGW. This is a “good for most” UV Dose that doesn’t represent a specific target microorganism. The required minimum dose for a 3-log reduction of cryptosporidium is often less than that. USEPA based validations will confirm the minimum UV Dose required to provide a 3-log inactivation of cryptosporidium based on the specific UV generator being tested.

An effective UV Disinfection system should provide adequate disinfection in a single pass. As UV technology does not contribute a residual to the water that can be sampled and tested, it requires an effective means to monitor performance of the system. An additional point to consider would also be:

UV Equipment must have a validated means to effectively monitor and display UV performance (UV Dose) in real time as to provide operators and regulators a way to quickly ascertain proper UV system performance.

It is with these changes that I feel we can effectively ensure that when UV equipment is selected for these applications, they are sized and tested accordingly.

Thank you for your consideration.

Greg Manier

UV Product Specialist

ETS-UV – an Evoqua -Xylem Brand

Neptune-Benson®
an EVOQUA brand

ETS-UV
an EVOQUA brand

Vortisand®
an EVOQUA brand

VAF™ filtration systems
an EVOQUA brand

Delta UV™
an EVOQUA brand