

**G.B. Collins Engineering, P.A.**  
**Comments to Proposed Code Modification SW7074-A1**

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**I. REFERENCES: CURRENT CODE PROVISIONS**

**Florida Building Code, 5th Edition (2014)**

**Chapter 4 – Special Detailed Requirements based on Use and Occupancy**

**Section 454 Swimming Pools and Bathing places (Public and Private)**

**454.1 Public swimming pools and bathing places.**

**454.1.9.8 Interactive Water Features (IWFs)**

**454.1.9.8.6.1** The filter system shall filter and chemically treat all water that is returned to the spray features. The filter system shall draft from the collector tank and return filtered water directly to the spray features. Excess water not required by the spray features shall be returned to the collector tank.

**454.1.9.8.6.2** The water feature pump shall draft from the collector tank.

**454.1.9.8.6.3** Alternatively, the contained volume of the system may be filtered and chemically treated based upon a 30-minute turnover of the contained volume with 100 percent returned to the collector tank by manifold piping. If this alternative is chosen, all water returned to the spray feature(s) must also be treated with an Ultraviolet (UV) light disinfection equipment to accomplish protozoan destruction in accordance with sound engineering and the requirements of Section 454.1.6.5.16.6. This alternative must have the ability to feed 6 mg/L free chlorine to the feature water as it is returned to the spray feature. The UV disinfection equipment shall be electrically interconnected such that whenever it fails to produce the required UV dosage, the water spray features pump(s) and flow will be immediately stopped.

**II. BACKGROUND: CURRENT MODIFICATION PROPOSAL: SW7074-A1**

On June 21, 2016, Bob Vincent from the Department of Health (“DOH”), in response to proposed code modification SW7074, proposed alternate language, known as SW7074-A1. SW7074-A1 provides:

454.1.9.8.6.1 Strike all, and Add:

All (100%) of the water from the collector tank must be first filtered, treated with disinfectant and pH adjustment chemicals, and then final treatment provided by an NSF Standard 50 certified UV disinfection unit with a minimum 40 mJ/cm2 dose before any of this treated water is piped to the water features.

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454.1.9.8.6.2 Strike all, and Add:

In the design above and the alternative below: excess water not required by the water features shall be returned to the collector tank; the recirculation system

shall be sized to treat the contained volume of water based upon a 30 minute turnover with a chlorine feeder/generator capable of producing a dosage of at least 12ppm; and the UV disinfection equipment shall be electrically interconnected such that whenever it fails to produce the required UV dosage, the water spray features pump(s) and flow will be immediately stopped.

- 454.1.9.8.6.3 Strike all, and Add:

In lieu of 454.1.9.8.6.1, the recirculation system must be designed to continuously return 100% of the water to the collector tank after all (100%) of the water is first filtered, treated with disinfectant and pH adjustment chemicals, and the final treatment provided by a validated UV disinfectant unit described in 454.1.6.5.16.6 before any of this treated water is piped to the water features.

- 454.1.9.8.6.8 Delete this code section as unnecessary

SW7074-A1 is now moving into the rulemaking stage under chapter 120 of the Florida Statutes.

### **III. SW7074-A1 LACKS SUPPORT FOR ITS REQUIREMENT OF A VALIDATED UV DISINFECTANT UNIT**

*SW7074-A1 provides two alternative requirements for UV disinfectant units for Interactive Water Features (“IWFs”) but lacks support for the requirement of one UV disinfectant unit over the other. As written, the modification will lead to inconsistent enforcement, a restraint on trade, and the need for additional code modifications.*

The proposed modification to section 454.1.9.8.6.1 (“Mod 1”) provides, in part: “final treatment provided by an **NSF Standard 50 certified UV disinfection unit** with a minimum 40 mJ/cm<sup>2</sup> dose before any of this treated water is piped to the water features” (emphasis added) as opposed to the proposed modification to section 454.1.9.8.6.3 (“Mod 3”) which states “and the final treatment provided by **a validated UV disinfectant unit described in 454.1.6.5.16.6** before any of this treated water is piped to the water features” (emphasis added). Section 454.1.6.5.16.6 provides:

Ultraviolet (UV) light disinfectant equipment may be used as supplemental water treatment on public pools (and additional treatment on interactive water features (IWF's)) subject to the conditions of this paragraph and manufacturer's specifications.

UV is encouraged to be used to eliminate or reduce chlorine-resistant pathogens, especially the protozoan cryptosporidium.

1. UV equipment and electrical components and wiring shall comply with the requirements of the *National Electrical Code* and the manufacturer shall provide a certification of conformance to the department.
2. UV equipment shall meet UL standards and shall be electrically interlocked with recirculation pump(s) on all pools and with feature pumps(s) on an IWF such that when the UV equipment fails to produce the required dosage as measured by an automated sensor, the feature pump(s) are disabled so the water features do not operate.
3. UV equipment shall be validated by a capable party that it delivers the required and predicted UV dose at the validated flow, lamp power and water UV transmittance conditions, and has complied with all professional practices summarized in the *USEPA Ultraviolet Disinfectant Guidance Manual dated November 2006*, which is publication number EPA 815-R-06-007 available from the department at <http://www.floridashealth.org/Environment/water/swim/index.html> or at [http://www.epa.gov/safewater/disinfection/lt2/pdfs/guide\\_lt2\\_uvguidance.pdf](http://www.epa.gov/safewater/disinfection/lt2/pdfs/guide_lt2_uvguidance.pdf).
4. UV equipment shall constantly produce a validated dosage of at least 40 mJ/cm<sup>2</sup> (millijoules per square centimeter) at the end of lamp life.
5. The UV equipment shall not be located in a side stream flow and shall be located to treat all water returning to the pool or water features.<sup>1</sup>

The proposed modification lacks support as to why an NSF Standard 50 certified UV disinfection unit with a minimum 40 mJ/cm<sup>2</sup> dose is permitted in Mod 1 but a validated UV disinfectant unit is required by Mod 3. In fact, a NSF certified UV disinfectant unit can have the same specifications as a validated system. A validated system undergoes validation testing to determine the operating conditions under which a UV reactor delivers the validated dose.<sup>2</sup> NSF, however, performs very similar testing including but not limited to product evaluations, product testing in a laboratory, and manufacturing facility testing.

Accredited by the American National Standards Institute (ANSI), NSF has developed American National Standards under the scope of public health, safety, environment and sustainability assessment. NSF standards are developed through a public process that ensures balanced input from industry representatives, public health/regulatory officials and consumer

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<sup>1</sup> A proposed code modification (SW7014) is currently pending for paragraph 3 of this provision. SW7014 proposes to add the words “used in higher risk facilities such as interactive water features, wading pools, and activity pools” after the first two words (“UV equipment”) of paragraph 3.

<sup>2</sup> The validated dose is defined as the UV dose in units of millijoule per centimeter squared (mJ/cm<sup>2</sup>) delivered by the UV reactor as determined through validation testing.

representatives. NSF's impartial accredited certification provides all stakeholders, industry, regulators, users and the general public, assurance that a certified product, material, component or service complies with the technical requirements of the referenced standard. This impartiality in carrying out its certifications controls all conflicts of interest and ensures its objectivity and transparency. As such, the certification provided by NSF has been relied upon within the commercial pool industry and should be relied upon within this modification.

The NSF Standard 50 is the standard used by many other states for UV disinfectant units on IWFs. For example, California requires UV disinfectant units to comply with the requirements established by the NSF/ANSI 50-2010:

**3106 B.16 Ultraviolet** light disinfection shall be used to supplement disinfection methods required in this Chapter unless another treatment process is provided that has been determined by a NRTL to be capable of providing at least the equivalent level of reduction of cryptosporidium as the ultraviolet light disinfection system specified in this section. The ultraviolet light disinfection unit shall comply with the applicable requirements established by the NSF/ANSI 50-2010 performance standard effective August 2010.

Cal. Code Regs. tit. 24 § 3106.

Another example is Indiana which requires that ultraviolet light dosage be forty (40) mJ/cm<sup>2</sup> or greater (which is the standard under Mod 1):

**675 IAC 20-5-23 Disinfectant equipment and chemical feeders**

(2) Secondary disinfection such as ultraviolet light or ozone in addition to chemical disinfection. (A) Disinfection equipment shall be tested and listed for use in spray pad disinfection. (B) Ultraviolet light dosage shall be forty (40) mJ/cm<sup>2</sup> or greater. (C) Ultraviolet light systems shall have a properly calibrated light intensity meter, automatic water flow shutoff in the event the light intensity decreases below recommended level and an alarm to advise of a malfunction. (d) Skimmer baskets shall not be used as chemical feeders.

675 Ind. Admin. Code 20-5-23.

These are just two examples of many. Thirty-one U.S. states, including Florida, utilize and/or require NSF certified pool products, including but not limited to UV disinfectant units.

Furthermore, Mod 3 is not sufficiently clear and will result in uneven and inconsistent enforcement, which restrains trade. Under Mod 3, a UV disinfectant unit must be validated by a “capable party” that the unit complies with the practices of the USEPA Manual. However the Florida Building Code fails to define a “capable party.” This ultimately sets the DOH and Florida contractors and engineers up for conflict and will most certainly lead to inconsistent enforcement and the need for additional code modifications. This must be addressed before the code modification is set into law.

In sum, a validated UV disinfectant unit does not provide superior filtration or other benefit over a NSF Standard 50 certified UV disinfectant unit. Requiring a validated UV disinfectant unit will restrain trade by significantly increasing the cost of construction and maintenance of IWFs and pool systems—while failing to provide any benefit sufficient to justify the increased costs. Furthermore, ambiguities and lack of clarity within SW7074-A1 will cause uneven, inconsistent, and potentially selective enforcement which will further restrain trade by discouraging engineers and contractors from designing and building IWFs.

#### **IV. PROPOSED MODIFICATION TO SW7074-A1**

##### **Mod 1: 454.1.9.8.6.1**

All (100%) of the water from the collector tank must be first filtered, treated with disinfectant and pH adjustment chemicals, and then final treatment provided by an NSF Standard 50 certified UV disinfection unit with a minimum 40 mJ/cm<sup>2</sup> dose before any of this treated water is piped to the water features.

##### **Mod 2: 454.1.9.8.6.2**

In the design above and the alternative below: excess water not required by the water features shall be returned to the collector tank; the recirculation system shall be sized to treat the contained volume of water based upon a 30 minute turnover with a chlorine feeder/generator capable of producing a dosage of at least 12ppm; and the UV disinfection equipment shall be electrically interconnected such that whenever it fails

to produce the required UV dosage, the water spray features pump(s) and flow will be immediately stopped.

**Mod 3:** 454.1.9.8.6.3 Strike all OR in alternative stricken language marked through and alternative language in bold

In lieu of 454.1.9.8.6.1, the recirculation system must be designed to continuously return 100% of the water to the collector tank after all (100%) of the water is first filtered, treated with disinfectant and pH adjustment chemicals, and the final treatment provided by a ~~validated UV disinfectant unit described in 454.1.6.5.16.6~~ **NSF Standard 50 certified UV disinfection unit with a minimum 40 mJ/cm<sup>2</sup> dose** before any of this treated water is piped to the water features.

Respectfully submitted,

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