



## INTERACTIVE WATER FOUNTAINS

### Introduction

Interactive water fountains, also known as “spray grounds,” “wet decks,” “splash pads,” “spray pads,” or “spray parks,” are water fountains on decks or pads, provided for water recreation. They give children the chance to play in water without the danger of drowning associated with swimming pools. Many are located in nontraditional areas such as malls. While most interactive water fountains are designed so the sprayed water lands on the deck for collection and reuse, some are designed so the sprayed water drains to waste. Since water does not pool, these facilities are not regulated as public swimming pools. However, similar to swimming pools, those interactive water fountains that recirculate water can cause disease if improperly designed or operated. Few interactive water fountains are guarded or fenced to prevent entry by animals or sick children. Few are even closely supervised. Sprayed water will rinse off dirt, vomit, blood, urine, fecal material, or other pathogens from a patron’s body; then flow back to the collection reservoir to be re-sprayed. Children have been observed squatting over spray nozzles, which increases the chance that there will be fecal contamination of the recirculated water.



While recreational water illnesses can be caused by a number of bacteria or viruses, such as E. coli 0157:H7, Hepatitis A, Giardia, or Shigella, the number one waterborne disease is Cryptosporidiosis, caused by the microscopic parasite *Cryptosporidium parvum*. Called “Crypto” for short, it is protected by an outer shell that allows it to survive outside the body for long periods of time. While some people exhibit no symptoms from Cryptosporidiosis, most experience diarrhea, loose or watery stools, stomach cramps, upset stomach, and a slight fever. Young children, pregnant women and those with weakened immune systems, such as those with AIDS, cancer, transplants, and some inherited diseases may develop more serious illness. Infections can result even at very low concentrations of Crypto in water. Its shell makes Crypto very resistant to chlorine disinfection. If a recreational water facility is properly designed to remove or inactivate Crypto, it will easily handle the other types of waterborne disease bacteria and viruses.

This document includes some of the pertinent sections of the Department of Homeland Security, Fire Prevention and Building Safety Commission, Indiana Swimming Pool, Spa and Water Attraction Construction Code, filed March 25, 2011. A copy of which can be obtained at: <http://www.in.gov/isdh/23281.htm>.

### Guidelines

The following guidelines are based on the requirements of ISDH’s Public Swimming Pool Rule, 410 IAC 6-2.1, modified to fit the needs of an interactive water fountain. Note: Guidelines 4 (disinfection) and 5 (filtration) do not apply to interactive water fountains that drain to waste. These IWF’s are not required to have recirculation.

1. Plans: Plans must be submitted to the Indiana Department of Homeland Security, Fire Prevention and Building Safety Commission for a design release prior to construction, rehabilitation or alteration as required per 675 IAC 20-5-2.

2. Water Supply: Potable water that meets the provisions of 327 IAC 8-2 shall be used as the source water.
3. Sewage Disposal: All waste must be disposed of in a sanitary sewer. In some instances, IDEM has permitted the wastewater to be used for irrigation.
4. Disinfect the recirculated water. A minimum concentration of 2.0 ppm chlorine or 4.0 ppm bromine with secondary disinfection of ultraviolet light or ozone and a pH in the range of 7.2-7.8 must be maintained. This higher level of disinfection is needed because the probability of fecal contamination is increased with an interactive water fountain. Also, chlorine will dissipate faster in an interactive water fountain due to the water being sprayed. Chlorine concentrations should be monitored electronically, so the water fountain will shut off automatically if the chlorine level drops below 2.0 ppm.

675 IAC 20-5-23 requires: 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.

- It shall be UV-C unit producing a wavelength of 254 nanometers.
- The standard for testing and listing of the UV unit for secondary disinfection is US EPA Ultraviolet Disinfectant Guidance Manual dated November, 2006, publication number EPA 815-R-06-007. This standard requires a 3 log (99.9%) reduction of *Cryptosporidium* oocysts, based on the theory of reducing to a concentration of 1 oocyst/100 ml (average volume of water swallowed by a swimmers). An ISO9000:2000 accreditation or NSF Standard 50 listing are both acceptable for validation.

**Do not use stabilized chlorine for disinfection.**

Over the average outdoor recreational season, cyanuric acid levels would build to the point of exceeding the 60 ppm safe upper limit for cyanuric acid (see Swimming Pool Rule 410 IAC 6-2.1, Section 30(j)). Exceeding this limit will cause water chemistry problems and may cause adverse health effects.

5. Filter the recirculated water. The design shall provide a separate filter for the interactive water fountain. Do not use the same filter serving a pool or other water recreation facility to also filter the water from an interactive water fountain. Shared filters could spread contamination to all pools and fountains on the same system. Also, other water venues may not be set up to disinfect at the high levels required for water from an interactive water fountain. A turnover rate of 0.5 hours is required in 675 IAC 20-5-14(b).
6. Both the design and operational procedures should assure that trip hazards are prevented.
7. Any grates on the deck pad must be kept secured and in good repair.
8. Flush any materials or contaminants off the surface of the spray pad daily prior to opening. Clean more thoroughly, if necessary. Both the design and operational procedures should assure that the water used for pre-opening cleaning is discharged to waste.
9. Bathrooms, with diaper changing areas must be provided, and be located to assure easy access. Bathroom breaks should be encouraged. The required number of plumbing facilities is listed in 675 IAC 20-5-25.
10. Drinking fountains must be provided, and be located to assure easy access as required in 675 IAC 20-5-25(e). Easily accessible sources of safe drinking water will discourage drinking of water from the interactive water fountain.

11. The following signs should be posted:

- Do not use if you had diarrhea within the last 2 weeks
- No pets allowed
- No glass or sharp objects are allowed on the spray pad
- Do not drink the water
- Children who are not toilet trained must use swim diapers covered by rubber pants with tight fitting elastic at the waist and legs

12. In case of a fecal accident, the fecal accident procedure outlined in should be utilized.

13. Overhead electrical wires should be located at least 20 feet away from any spray pad, measured horizontally. Also, there should be no unprotected electrical circuits or wiring within 10 feet of any spray pad.

14. To prevent injury to patrons, unless certified by a feature designer and/or manufacturer, the water spray from a feature nozzle shall not exceed a height of 6 feet and not exceed a flow rate of 20 psi.

Revised February 4, 2013