

Aquatic Facility Pool Fouling

Lifesaving Society Standard Approved by the Ontario Board of Directors, January 2024

Standard

Owner/operators shall follow the procedures listed below in the event of a pool fouling in their aquatic facility.

Procedure for pool fouling:

1. Closure in the event of a fecal or vomit contamination in an aquatic facility; the operator shall immediately close the facility to swimmers until remediation procedures are complete. This closure shall include the affected aquatic facility and other facilities that share the same recirculation system.
2. Contaminating material shall be removed (e.g., using a net, scoop, or bucket) and disposed of in a sanitary manner. Fecal or vomit contamination of the item used to remove the contamination (e.g., the net or bucket) shall be removed by thoroughly cleaning followed by disinfection (e.g., after cleaning, leave the net, scoop, or bucket immersed in the pool during the disinfection procedure prescribed for formed-stool, diarrheal-stool, or vomit contamination, as appropriate).
3. Aquatic vacuum cleaners shall not be used for removal of contamination from the water or adjacent surfaces unless vacuum waste is discharged to a sanitary sewer and the vacuum equipment can be adequately disinfected. If necessary, clean and disinfect any contaminated pool and deck surfaces using adequate disinfecting solution having a strength equivalent to at least 50 ppm chlorine.
4. Aquatic facility water that has been contaminated by feces or vomit shall be treated as follows:
 - a) To ensure effective disinfection, check to ensure that the water's pH is 7.5 or lower and adjust if necessary.
 - b) To ensure effective disinfection check verify and maintain water temperature at 77°F (25°C) or higher (where pH is higher than 7.5 or water temperature is below 77°F (25°C) a calculation of the CT inactivation value may be required).

- c) Operate the filtration/recirculation system while the pool reaches and maintains the proper free chlorine concentration during the remediation process.
 - d) Test the chlorine residual at multiple sampling points to ensure the proper free chlorine concentration is achieved throughout the pool for the entire disinfection time.
 - e) Use only non-stabilized chlorine products to raise the free chlorine levels during the remediation.
5. For formed-stool contamination:
- Formed-stool contaminated water shall have the free chlorine residual checked and the free chlorine residual raised to 2.0 mg/L (if less than 2.0 mg/L) and maintained for at least 25 minutes (or an equivalent time and concentration to reach the CT inactivation value) before reopening the aquatic facility.
6. For diarrheal-stool contamination:
- Check the free chlorine residual and then raise the free chlorine residual to 20.0 mg/L and maintain for at least 12.75 hours (or an equivalent time and concentration to reach the CT inactivation value) before reopening the aquatic facility.
7. For vomit-contamination:
- Vomit-contaminated water shall have the free chlorine residual checked and the free chlorine residual raised to 2.0 mg/L (if less than 2.0 mg/L) and maintained for at least 25 minutes (or an equivalent time and concentration to reach the CT inactivation value) before reopening the aquatic facility.
8. Document all pool fouling events.

Definitions

Formed fecal matter (stool): Hard, fully formed, and can be removed from the pool in one piece.

Vomit: Matter forcefully expelled vomited from the stomach through the mouth or nose.

Liquid fecal matter (stool): Diarrheal stool.

Cryptosporidium: A parasite causing gastrointestinal illness. Symptoms of illness are watery diarrhea, abdominal cramps, nausea and headaches. Will usually disappear for healthy people within one month. The illness can be more severe or life threatening to immune compromised people such as those living with AIDS or cancer and those who are elderly or very young.

CT inactivation value: CT inactivation value refers to the concentration of free chlorine in parts per million (ppm) multiplied by time in minutes at a specific pH and temperature.

Background/Rationale

The Centre for Disease Control (CDC) reported that outbreaks of gastrointestinal illness associated with swimming pools continue and most are associated with cryptosporidium. Similar incidents have been reported in Ontario. The CDC specifies procedures that should be followed after discovering fecal matter in a swimming pool. Consequently, the Lifesaving Society with the assistance of the Ministry of Health and other recreation professionals established fecal management procedures. In addition, the Lifesaving Society continues to monitor pool fouling protocols and educate pool operators and the public about dealing with fecal pool fouling and the health risks they present.

The primary health concern is cryptosporidium. The parasite is typically found in diarrhea; therefore, pool fouling protocols will vary with type of accident that occurs in aquatic facilities. Cryptosporidium appears to be resistant to standard chlorine levels, that is, it can exist in pools for up to seven days at a chlorine level of 1.0 ppm, and up to 6 hours at 10 ppm. Cryptosporidium can be effectively eradicated at chlorine levels of 20 ppm.

Implementation

Operators should ensure all staff are aware of the correct procedures in the management of an aquatic facility pool fouling. These procedures may vary for outdoor pool locations that are stabilized. These procedures should be reviewed during staff training sessions and available in the facility office.

An important part of prevention is public education. It will reduce the health risks presented by cryptosporidium. The public should be informed that:

- Patrons must shower with warm soapy water upon entering the pool initially as well as every time after using the washroom.
- Children with diarrhea should not go into the pool.
- Any kind of fecal accident must be reported to staff.
- Change tables must be disinfected daily.
- Use swim diapers or waterproof pants on children who are not toilet trained and adults with bowel issues.

References

- Model Aquatic Health Code, Section 6.5, 2018
- Centers for Disease Control website, 2021
- Lifesaving Society *Pool Operations Manual*, 2008
- Shields JM, Hill VR, Arrowood MJ, Beach MJ. Inactivation of *Cryptosporidium parvum* under chlorinated recreational water conditions. *External icon J Water Health* 2008;6(4):513–20

Disclaimer

Lifesaving Society Safety Standards are developed using Coroners' recommendations, the latest evidence-based research, and reflect the aquatics industry's best practices at the time the publication was approved.

The purpose of these standards is to encourage swimming pool, waterpark and waterfront owners, managers, operators and regulators to adopt these standards, in order to prevent drownings in aquatic environments.

Lifesaving Society Safety Standards do not replace or supersede local, provincial/ territorial legislation or regulations, but they are considered the standard to which aquatic facility operators should work towards, in order to enhance safety within their operations and to prevent drowning.

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