

Fecal or Blood Contamination of Regulated Swimming Pools

Swimming is one of New York State's most popular recreational activities. With millions of people visiting swimming pools every year, there may be incidents of fecal or blood contamination of swimming pool water. Although aesthetically displeasing, accidental discharges of feces, or occasional blood contamination of swimming pool water may not require facility closure or replacement of pool water to ensure that the health of bathers is protected. However, it is important to understand the appropriate method of evaluating each incident so that pool water contamination response can be quick and effective. By doing so, pool operators can minimize potential pool closure while also keeping bathers safe from hazardous exposures. The following guidance should be used to evaluate an incident of swimming pool contamination and determine the appropriate response. ***This has been changed to reflect the CDC revised recommendation for diarrhea incidents.***

Fecal Contamination

Fecal contamination of swimming pool water poses a potential risk of infection to bathers. Feces may contain pathogenic or harmful bacteria, viruses and parasites that are resistant to chlorine at concentrations found in a pool under normal operating conditions. Special precautions must be taken to ensure that the water is made safe for bathers. Swimming pool operators must respond differently to formed-stool and diarrhea in the swimming pool. Diarrhea may indicate that a bather is ill with pathogens such as the highly chlorine-resistant parasite *Cryptosporidium*. Therefore, more stringent measures must be taken to sanitize the pool when diarrhea discharges occur.

The following steps should be followed when fecal contamination of a swimming pool occurs.

Formed-Stool (solid, non-liquid)

- ☐ Clear the pool of all bathers.
- ☐ Using a skimming net or scoop, remove as much fecal material as possible from the water and dispose into the sanitary sewer.
- ☐ Clean and disinfect the net (bleach/chlorine solution will work) to prevent reintroducing fecal matter to the water.
- ☐ Spot treat the area of the pool where the contamination occurred with approximately 8-10 ounces of chlorine.
- ☐ Raise the pool water's Free-Chlorine residual to 2-3 ppm (pH 7.2-7.5).
 - Take chlorine readings from multiple locations around the pool to verify that all areas have reached 2-3 ppm.
- ☐ Close the pool for 30 minutes.

Diarrhea (liquid stool)

- ☐ Clear the pool of all bathers.
- ☐ Using a skimming net or scoop, remove as much fecal material as possible from the water and dispose into the sanitary sewer.
- ☐ Clean and disinfect the net (bleach/chlorine solution will work) to prevent reintroducing fecal matter to the water.
- ☐ Based on pool volume, calculate the amount of chlorine that is needed to establish **20 ppm of chlorine*** in the pool.
 - 2/3 quarts of 12% sodium hypochlorite **Or** ¼ pound of 65% calcium hypochlorite per 10,000 gallons pool water will raise the free chlorine residual by approximately 2 ppm.
- ☐ Add the correct amount of chlorine to the pool. Chlorine may be added by hand around the swimming pool. Maintain the pH between 7.2-7.5.
- ☐ Keep the pool closed for **13 hours.** (Revised)**
 - Continue to operate the filter and disinfection equipment during this period.

Diarrhea (liquid stool) (cont.)

- ☐ After 8 hours, backwash filters thoroughly.
- ☐ Make sure that the chlorine concentration in the pool is within acceptable levels (0.6 ppm – 5.0 ppm) before allowing bathers to enter the water.

*****REVISED***** - Pool closure time is dependent on the level of free chlorine present in the water. The following combinations of Free Chlorine residual and pool closure time provide the same level of protection against disease transmission and can be substituted in lieu of 20ppm for 13 hours.

Free Chlorine Residual*	Closure Time**
20 ppm	13 hours
15 ppm	17 hours
10 ppm	26 hours
5 ppm	51 hours

At Pools Using Bromine For Disinfection:

Little is known about Bromine's effectiveness against some parasites such as Cryptosporidium. To ensure proper disinfection of the swimming pool water after a fecal discharge:

- ☐ Follow the directions above for the type of fecal discharge present in the pool.
 - Based on pool volume, calculate the amount of chlorine that is needed to establish the required level of chlorine.
 - 1 3/5 quarts of 5% chlorine bleach **Or** 2/3 quarts of 12% sodium hypochlorite **Or** ¼ pound of 65% calcium hypochlorite per 10,000 gallons pool water will yield approximately 2 ppm of free chlorine.
 - 4 gallons of 5% Chlorine Bleach **Or** 6 2/3 quarts of 12% sodium hypochlorite **Or** 2 ½ pounds of 65% calcium hypochlorite per 10,000 gallons pool water will yield approximately 20 ppm of free chlorine.
- ☐ Add the appropriate amount of chlorine to the pool. Chlorine may be added by hand around the swimming pool.
- ☐ Keep the pool closed for the length of time specified for the type of fecal contamination (formed stool or diarrhea).
- ☐ After the appropriate length of pool closure, backwash filters thoroughly and wait until the disinfectant concentration is within acceptable levels before allowing bathers to enter the water.

Blood Contamination

Blood discharge into swimming pool water poses very little risk to bather health when the swimming pool's water chemistry and chlorine levels meet the requirements of the State Sanitary Code Subpart 6-1 "Swimming Pools." The chlorine (or bromine) that is already present in the pool quickly deactivates pathogens that may be in blood. As a result, there have been no documented cases of blood-borne disease transmission from swimming pool water. If blood contamination of a pool occurs, the following follow steps should be taken.

- ☐ Test the pool's water chemistry and chlorine (or bromine) levels to ensure compliance with State Sanitary Code section 6-1.11 (c).
 - If chlorine (or bromine) levels are satisfactory no further action is necessary.
 - If disinfectant level does not meet the minimum level required for pool operation, the pool must be closed and chlorine (or bromine) added until levels are satisfactory.