COUNTY OF IMPERIAL

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Instructions for Management of Fecal Accidents at Public Pools

1. For both formed-stool and diarrheal/loose-stool fecal accidents, direct everyone to leave the pool. Close the pool. Do not allow anyone to enter the contaminated pool until all decontamination procedures have been completed. If you have multiple pools that use the same filter, close all pools.

2. For both formed-stool and diarrheal/loose-stool fecal accidents, remove as much of the fecal material as possible using a net or scoop and dispose of it in a sanitary manner. Clean and disinfect the net or scoop (e.g., after cleaning, leave the net or scoop immersed in the pool during the disinfection period). Vacuuming stool from the pool is not recommended. If the pool is vacuumed, waste should be directed directly to a sanitary sewer and not through the filtration system of the pool.

Formed stool in pool

3. Raise the free chlorine concentration to 2.0 ppm (mg/L) and ensure the pH is between 7.2 and 7.5 and the water temperature is about 77° F (25° C).

4. Maintain the free available chlorine concentration at 2 ppm and the pH at 7.2-7.5 for at least **25 minutes**. This is equivalent to a CT value of 50. (For a definition of CT, see notation "A" below.)

5. If the pool is using stabilized chlorine or contains cyanuric acid, check the cyanuric acid level. If the cyanuric acid level is greater than 50 ppm, the pool should be drained and filled with fresh water until the cyanuric acid level is below 50 ppm. Maintain the free available chlorine concentration at 2 ppm and the pH at 7.2-7.5 for at least **2 hours**. This is equivalent to a CT value of 240.

6. Ensure that the filtration system is operating during the entire disinfection process and the free available chlorine concentration and pH are maintained at the proper levels.

7. The pool may be reopened after the disinfection process is completed and the free available chlorine concentration is below 5.0 ppm and the pH between 7.2 and 7.8.

Diarrhea or loose stool in pool

3. Raise the free chlorine concentration to 20 ppm (mg/L) and ensure the pH is between 7.2 and 7.5 and the water temperature is about 77° F (25° C).

4. Maintain the free available chlorine concentration at 20 ppm and the pH at 7.2-7.5 for at least **12.75 hours**. This is equivalent to a CT value of 15,300. (For a definition of CT, see notation "A" below.)

5. If the pool is using stabilized chlorine or contains cyanuric acid, check the cyanuric acid level. If the cyanuric acid level is greater than 50 ppm, the pool should be drained and filled with fresh water until the cyanuric acid level is below 50 ppm. Maintain the free available chlorine concentration at 20 ppm and the pH at 7.2-7.5 for at least **60 hours**. This is equivalent to a CT value of 72,000.

6. Ensure that the filtration system is operating during the entire disinfection process and the free available chlorine concentration and pH are maintained at the proper levels.

7. After the disinfection process is completed, the filter should be thoroughly backwashed to a sanitary sewer. The pool may be reopened after the free available chlorine concentration is below 5.0 ppm and the pH is between 7.2 and 7.8.

8. Establish a fecal accident log. Document each fecal accident by recording the following information:
    - Date
    - Time of the event
    - Formed stool or diarrhea
    - Free available chlorine concentration and pH at the time of observation of the event
    - Free available chlorine and pH before reopening the pool
    - Contact time
    - Procedures followed to respond to the fecal accident, including the process used to increase the free chlorine residual, if necessary.

9. In the event of contamination with vomitus in a pool, the procedures for a "formed stool" should be followed.

Important Notes!

A. CT inactivation value (or contact time) refers to concentration (C) of free chlorine in ppm multiplied by time (T) in minutes at a specific pH and temperature. Any combination of chlorine concentration and time may be used to arrive at a particular CT value. For example, a chlorine concentration of 10 ppm for 1,000 minutes has a CT value of 10,000 and is equivalent to a chlorine concentration of 20 ppm for 500 minutes. Both have a CT value of 10,000.

B. Fecal accident pool closure procedures are based on recommendations by the Centers for Disease Control and Prevention (http://www.cdc.gov).

C. Short-time closure is based on the inactivation of 99.9% of Giardia cysts derived from the EPA's Disinfection Profiling and Benchmarking Guidance Manual. Long-time closure is based on the inactivation of 99.9% of Cryptosporidium oocysts.

D. The impact of chlorine stabilizers (pools with cyanuric acid) on pathogen inactivation is unclear and warrants further investigation. Stabilized chlorine includes compounds such as dichlor and trichlor.

E. Laboratory studies suggest that Crypto inactivation may not be achieved in the presence of 50 ppm of cyanuric acid, even after 24 hours at 40 ppm free available chlorine, pH at 6.5 and a temperature of 77°F (25° C).

F. Many conventional test kits cannot measure free available chlorine in the range that includes 20 ppm. Use a chlorine test kit that can measure in this range or use a conventional kit and make dilutions using chlorine-free water.

G. High levels of chlorine may damage pool equipment. Exercise caution or consult with an experienced aquatic professional.

H. Non-chlorine disinfectants are not addressed in this procedure and should not be used.

I. If the pool is low volume, such as a small pool, spa pool, or wading pool, the pool may be drained. The pool should be refilled, the water balanced, and the proper CT value achieved before the pool is reopened.

J. ppm = parts per million or mg/L