

360 - Pool Contamination Policy

1.0 Introduction

This policy is to outline the required procedures for the Tukwila Pool Metropolitan Park District (TPMPD) facility for responding to fecal accidents in chlorinated Water Recreation Facilities, as defined by WAC 246-260. According to the Centers for Disease Control (CDC), a diarrheal fecal accident presents a higher risk than a formed stool accident. With most diarrheal illnesses, the number of infectious germs found in each bowel movement decreases as the diarrhea stops and the person's bowel movements return to normal. Therefore, formed stool is probably less of a risk than a diarrheal accident and the decontamination steps are slightly different.

1.1 Decontamination Steps

- a) For both formed stool and diarrhea accidents and vomit, direct everyone to leave the pool. If you have multiple pools that use the same filter, all pools will have to be closed. Do not allow anyone to enter the contaminated pool(s) until all decontamination procedures are completed.
- b) Remove all of the fecal material or vomit as 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 disinfection).
- c) Spot disinfect the area of contamination with a small quantity of available disinfectant. A solution of 5.25 percent calcium hypochlorite or sodium hypochlorite diluted 1:10 with water may be used for disinfection.

1.2 Minimum Disinfection time for a Formed-Stool Fecal Incident and Vomit

Free Chlorine Level (PPM)	Disinfection Time
1.0	45 minutes
2.0	25 minutes
3.0	19 minutes

Formed stools can act as a container for germs. If the fecal matter is solid, removing the feces from the pool without breaking it apart will decrease the likelihood of pool contamination.

- a) Raise the free available chlorine to a minimum of **3.0 ppm Free CL** and ensure the pH is between 7.2 -7.5. This chlorine concentration was selected because it will kill Giardia in less than **30 minutes**, which is the worst scenario according to the CDC
- b) Check the level of chlorine again to ensure the concentration is at least 3.0 ppm Free CL, and pH 7.2- 7.5 for at least 30 minutes.
- c) Swimmers may be allowed back into the pool after the required CT value (see footnote 1) has been achieved and the chlorine level has been returned to the **normal operating range** allowed by WAC 246-260- 999. Maximum Free CL value must be under 10.0 ppm for a pool to be reopened.
- d) Check to make sure chlorine is not more than the test kit can read; use **dilution test before reopening the pool if the CL level is above 5.0 PPM**, (see footnote 2)
- e) **Before reopening the pool**, record the accident on the TPMPD Contamination Incident Report and Incident Log (Attachment B).

1.3 Disinfection Time for a Diarrheal Fecal Incident

Free Chlorine Level (PPM)	Disinfection Time
10	1,530 Minutes (25.5 Hours)
20	765 Minutes (12.75 Hours)
40	383 Minutes (6.5 Hours)

Diarrheal accidents are much more likely to contain germs than formed stool accidents.

- a) Raise the free available chlorine concentration to **20 ppm** and maintain the pH between 7.2 and 7.5. This chlorine and pH level should be sufficient to inactivate *Cryptosporidium* and should be maintained for at least **12.75 hours** (see footnote 1).
- b) Ensure that the filtration system is operating while the pool reaches and maintains the proper chlorine level during disinfection. If necessary, consult an aquatics professional to determine and identify the feasibility, practical methods, and safety considerations before attempting the hyper chlorination of any pool.
- c) Backwash the filter thoroughly after reaching the CT value and replace the filter media.
- d) Swimmers may be allowed back into the pool after the required CT value has been achieved and the chlorine level has been returned to the **normal operating range** allowed by WAC 246-260- 999. Maximum Free CL value must be under 10.0 ppm for a pool to be reopened.
- e) Check to make sure chlorine is not more than the test kit can read; use dilution tests use **dilution test before reopening the pool if the CL level is above 5.0 PPM** (see Footnote 2).

Before reopening the pool, record the accident on the TPMPD Contamination Incident Report and Incident Log.

NOTE:

- *For incidents resulting in vomitus, blood, or other bodily fluids on the pool deck or in the locker rooms, refer to TPMPD blood borne pathogens precautions and procedures.*
- *Improper handling of chlorine-based disinfectants could cause injury. Follow TPMPD hazard communication standard and review proper handling, personal protective equipment, etc. on the safety data sheet for each chemical used.*

If an incident occurs resulting in minor cuts and scrapes to the bather, verify that at the time of the incident the pool's disinfection levels meet the requirements outlined in the water recreation facility guidelines.

Footnote 1: *CT refers to concentration (C) of free available chlorine in ppm multiplied by time (T) in minutes. If pool operators want to use a different chlorine concentration or inactivation time, they need to ensure that CT values always remain the same (See CDC Web address for examples and additional recommendations: http://www.cdc.gov/healthyswimming/fecal_response.htm)*

Footnote 2: *Many conventional test kits cannot measure high free available chlorine levels. Use chlorine test strips that can measure free available chlorine in a range that includes 20 ppm (such as those used in the food industry) or make dilutions for use in a standard DPD test kit using chlorine-free water.*

ATTACHMENT A-360

High Chlorine Dosage Guidelines

Use only after contamination of pool by feces or vomitus.

CAUTION:

- You are using this worksheet because your pool has been contaminated by feces or vomitus AND the responsible person is ill or suspected to be ill, OR the stool or vomitus is loose or spread into a large area.
- Use this sheet only if the pool cannot be closed for 24 hours (see Step 4b on the other side of this guide).
- Be aware that you will be trying to reach a high chlorine residual. After determining the needed chlorine level, you should contact your swimming pool equipment supplier to ensure this level will not have a harmful effect on the pool or equipment.
- Do not use this procedure unless you are familiar with calculating and reaching high chlorine residuals.
- Do not use this procedure unless you understand how to use your chlorine test kit to accurately read high chlorine residuals.
- Do not use this procedure unless you can quickly lower high free chlorine residuals to less than 6 PPM.

Time and Concentration Calculation:

Use this chart to determine the amount of time you wish to keep the pool closed and the minimum concentration of chlorine necessary for that time to ensure bacteria from the incident are killed. Times different from the chart can be calculated by using the formula: $7,200, T = C$ or $7,200, \text{Time in minutes} = \text{the Concentration of chlorine in PPM}$.

Time	4 hrs	6 hrs	8 hrs	10 hrs	12 hrs	14 hrs	16 hrs	18 hrs	20 hrs
Hours	30ppm	20ppm	15ppm	12ppm	10ppm	9ppm	8ppm	7ppm	6ppm

Amount of Chlorine Needed:

The amount of chlorine needed to achieve the PPM you have determined will depend on:

1. The volume of water in your pool and,
2. The concentration of the chlorine you are using. Read the product information with the chlorine you are using, or contact your pool equipment supplier. You might consider using chlorine made for shocking which would dissipate quickly. The pool cannot be opened until the free chlorine level is below 6 PPM.

ATTACHMENT B-360

Contamination Incident Report

Incident Control Log # _____

Date of Occurrence: _____ Material in the pool was: _____

Refer to the TPMPD Pool Contamination Guidelines and the High Chlorine Dosage Guidelines for specific response and calculations needed for incident.

The person responsible:

() had illness symptoms; () had no illness symptoms, () could not be found.

Contaminated material in the water was: () Solid () Liquid

It was determined to close the pool for _____ hours and the free chlorine level to be maintained was _____ ppm.

The amount of chlorine added was _____ (lbs, ozs., qts, gals.) of _____ (type of chlorine added). The pool was closed at _____ ()AM; ()PM on ____/____/____.

The pool was reopened at _____ ()AM; ()PM on ____/____/____.

The chlorine level at the time of opening was _____ ppm (*pools with a free chlorine level above 6ppm cannot be opened*)

Signed: _____

Name: _____ Date: _____

Supervisor: _____

Signed: _____ Date: _____