

Diarrhoeal incident – public swimming pools and spa pools that use chlorine without cyanuric acid

Diarrhoeal incidents pose a particularly high risk to the health of bathers. Immediately closing the affected pool and undertaking appropriate remediation is the only way to prevent the spread of disease.

Recommended remedial steps

1. Immediately close the affected pool and any other connected pools within the public swimming pools and spa pools and ensure staff involved in the response have inappropriate personal protective equipment.
2. Remove as much of the faecal material as possible using a bucket, scoop or another contain that can be discarded or easily cleaned and disinfected. Dispose of the faecal material to the sewer. Do not use vacuum cleaners for removing faecal material unless the vacuum waste can be directly discharged to the sewer and the vacuum equipment can be adequately cleaned and disinfected.
3. Adjust the pH to 7.5 or lower.
4. Hyper-chlorinate the affected pool by dosing the water to achieve a free chlorine CT value of 15,300 mg.min/L for inactivation of *Cryptosporidium*. For example, free chlorine of 20 mg/L for 13 hours or 10 mg/L for 26 hours or via alternative combination of chlorine concentration and time that achieve the required CT, Shorter contact times to meet the CT required to inactivate *Cryptosporidium* can be achieved if hyper-chlorination includes the combination of chlorine and chlorine dioxide, see table below:

Comparison of CT values and contact time for 3-log₁₀ reduction of *Cryptosporidium* using hypochlorite to form free chlorine and ClO₂, independently and in combination¹

ClO ₂ concentration (mg/L)	Free chlorine concentration (mg/L)	Contact time	CT value (mg.min/L)
0	20	12 h 45 min	15,300
1.4	3.6	4 h 54 min	1,059
5	2.6	1 h 45 min	273

¹ Adapted from **Murphy et al. 2014**.

5. Ensure filtration and any secondary disinfection systems operate for the whole decontamination process.
6. If the filtration system incorporates a coagulation step, ensure coagulant concentration is correct to enhance the filtration process.
7. After the required CT has been achieved, reduce total chlorine to below 10 mg/L. Sodium thiosulphate can be added to neutralise excess chlorine.
8. Backwash filter media or replace the filter element as appropriate. Precoat filter media should be replaced.

9. Ensure the water is balanced.
10. Hygienically clean, disinfect or dispose of materials, tools, equipment or surfaces that have come into contact with contaminated water.
11. Record the incident and remedial action taken.
12. Reopen the pool.