

Cryptosporidium – What pool operators need to know

Information for aquatic facilities
Water Unit, January 2018

What is *Cryptosporidium*?

Cryptosporidium is a protozoan parasite that causes the gastrointestinal illness cryptosporidiosis in both humans and animals. *Cryptosporidium* oocysts (the infective form of the parasite) are shed in large numbers in the faeces of infected swimmers, have a relatively low infectious dose, are extremely hardy in the environment and are highly resistant to commonly used chemical pool disinfectants. If a pool becomes contaminated by *Cryptosporidium*, it can spread to patrons, even when chlorine levels are well maintained.

What is cryptosporidiosis?

The main symptom of cryptosporidiosis is profuse, watery diarrhoea, often with cramping and abdominal pain. Symptoms generally go away without treatment within 30 days in healthy people; however, immunocompromised people can have a longer and potentially life-threatening illness. People can also be infected but not show any symptoms.

Young children are particularly susceptible, especially those under five years of age.

Why is *Cryptosporidium* a problem for swimming pool operators?

Swallowing swimming pool water contaminated with *Cryptosporidium* oocysts from infected swimmers is a common way the parasite is transmitted. Swimming in public swimming pools is a common risk factor for cryptosporidiosis outbreaks in Victoria, interstate and overseas.

Three key characteristics of the *Cryptosporidium* oocyst make contamination of aquatic facilities particularly problematic:

- They can be excreted in large numbers by infected swimmers, even after acute symptoms have ceased (up to 50,000,000 oocysts per millilitre of faeces).
- They have a relatively low infectious dose (ingestion of less than 10 oocysts can lead to infection in a healthy adult).
- They are highly resistant to normal levels of chlorine used for pool disinfection (oocysts can survive for more than 10 days in a pool maintained within regulatory chlorine levels).

Young children are particularly prone to introducing *Cryptosporidium* into pools because of poor hygiene, reduced continence and use of ineffective swim nappies.

What is a cryptosporidiosis outbreak?

In Victoria, a cryptosporidiosis outbreak linked to an aquatic facility is defined as two or more unrelated cases of cryptosporidiosis who swam at the same aquatic facility within 12 days of illness onset, where there is 28 days or less between their onsets of illness.

If an outbreak is linked to an aquatic facility, a local government environmental health officer will visit the facility to undertake an assessment and to direct remedial action if required. This may include closure and hyperchlorination of the pool to inactivate *Cryptosporidium* oocysts in the water to minimise the risk to public health.

How can *Cryptosporidium* be removed from a pool?

Once introduced, *Cryptosporidium* oocysts are very difficult to remove from a swimming pool. The following measures can reduce the risk to public health:

- optimal water circulation, coagulation, filtration and backwashing practice
- effective disinfection, including secondary disinfection with ultraviolet or ozone
- effective hyperchlorination if *Cryptosporidium* contamination is suspected.

Consult a pool treatment specialist for advice on the best treatment processes for individual pools.

How can *Cryptosporidium* contamination be prevented?

The most effective way to minimise the risk of cryptosporidiosis to swimmers is to prevent *Cryptosporidium* contamination in the swimming pool. Measures should include:

- good facility design and operation to facilitate good hygiene among swimmers, including providing soap at all showers and hand wash basins
- active promotion of the key Healthy Swimming messages to swimmers:
 - Do not swim if you have diarrhoea.
 - Always shower and wash thoroughly with soap (especially your bottom) before you swim.
 - Always wash your hands with soap after going to the toilet or changing a nappy.
 - Change nappies in nappy change areas only.
 - Avoid swallowing pool water.
- effective risk management and incident response policies:
 - **Faecal incident policy** – the policy should identify a liquid faecal incident as a potentially high-risk *Cryptosporidium* contamination event and detail procedures to effectively address this risk. For further information, refer to the department's [Faecal incident response – recommendations for aquatic facilities](https://www2.health.vic.gov.au/public-health/water/aquatic-facilities/faecal-incident-response) <<https://www2.health.vic.gov.au/public-health/water/aquatic-facilities/faecal-incident-response>>.
 - **Ill-swimmer exclusion policy** – ill patrons should not swim for 14 days after diarrhoea has stopped. Offering a make-up lesson to parents of ill children can help achieve compliance with this policy.
 - **Pre-swim shower policy** – encourage showering with soap and water before swimming, especially for young children.
 - **Swim nappy policy** – all non-toilet-trained children should wear tight-fitting waterproof pants or swim nappies. Parents should be made aware that wearing a swim nappy is not a substitute for regular toilet breaks and nappy changes, as their ability to contain faeces in the water for any length of time is extremely limited.

These policies should be actively promoted to parents of children enrolled in swimming lessons – for example, in an information pack provided at the time of enrolment.

Where can I get further information and resources?

Further information for aquatic facilities is available online at:

<https://www2.health.vic.gov.au/public-health/water/aquatic-facilities>

Healthy Swimming promotional resources (digital download and hard copy orders) are available online at:

<https://www2.health.vic.gov.au/public-health/water/aquatic-facilities/healthy-swimming>

Contact the Water Unit on 1300 761 874 or [email](mailto:water@dhhs.vic.gov.au) <water@dhhs.vic.gov.au>.