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The War Against RWIs

RWIs are a major challenge for pool professionals. Fortunately, there's a variety of weapons that work against them.

Recreational water illnesses have been a big topic of concern in trade publications and the mass media in recent months.

In the fight to eliminate these stealthy germs, industry professionals use several approaches. The methods are based on research, health department regulations, and recommendations from the Centers for Disease Control and Prevention.

Let's take a look at how you can keep RWIs out of the pools you service.

Old reliable

One of the most effective tools to prevent the threat of swimmer sickness is still good, old-fashioned chlorine sanitizer. But when chlorine is used against contaminants in pool water, it's important to understand the varying contact time (CT) values that exist. These values depend on the type of disease-causing microorganism.

For example, *giardia* has a CT value of 45 minutes at 1 ppm of chlorine. This means it's inactivated in 45 minutes of contact with pool water that has a chlorine residual of 1 ppm. While residential pools and spas are not subject to health department regulations, they are still vulnerable to contamination from swimmers. Therefore, maintaining a proper level of chlorine sanitizer is important.

The problem child of disease-causing microorganisms is *cryptosporidium*, which has a CT value of 9,600 minutes or 6.7 days. Thus, it remains active for at least a week in normally chlorinated pools.

With the possibility of billions of chlorine-resistant *crypto* cysts present in pool water, it's easy to see how swimmers can become infected. In fact, recent studies conducted by the EPA have shown that the average adult swallows up to an ounce of water when swimming. Children usually consume twice as much as adults.

Because *crypto* is so chlorine-resistant and has a size of 4 to 6 microns, it's difficult to contain. The majority of public facilities still use sand systems that only filter down to 25 microns. Many residential pools use DE filters that can pick up under 4 microns. Nevertheless, studies have shown that *crypto* cysts actually have the ability to elongate and press through filtration media in a viable state.

Existing preventive measures for *crypto* hardly seem effective. They currently range from ensuring that swimmers properly shower before entering a pool to keeping sick people out of the water.

Hyperchlorination (aka superchlorination) methods are recommended by health departments to deal with the suspicion of *crypto* in pools. The hyperchlorination method is typically 20 to 30 ppm of chlorine for eight to 12 hours. This method may vary depending on local health regulations. However, the CDC reported in 2004 that there was no conclusive evidence to prove complete eradication of *crypto* using this recommended method.

An alternate route

Fortunately, there are alternative methods for dealing with *crypto*, as well as other RWIs. For example, ozone is becoming popular as a backup means because it kills bacteria and *crypto* cysts more than 3,000 times faster than chlorine.

Ultraviolet light is another system being used more and more. But high turbidity can cause the UV systems to become less effective in the war against *crypto*. For this reason, health departments also regulate turbidity levels in public pools.

Regular dilution of water is another means of reducing the risk of illness. This is already practiced on public pools in Europe, where there are requirements of an entire pool being diluted with fresh water over a month's time. Some other standards suggest adding 30 liters of fresh water daily for every swimmer in the pool.

Enhancing filtration

Another viable method any facility or pool can begin using immediately is enhanced filtration. The CDC and many aquatics experts have long considered filter enhancement with the use of specialty clarifiers such as polymers.

The technology uses two opposing polymers that quickly and effectively entrap microorganisms such as algae, *e. coli* and *crypto*. This method has been soundly proven through an independent study conducted at Auburn University and presented at the World Aquatic Health Conference in 2005.

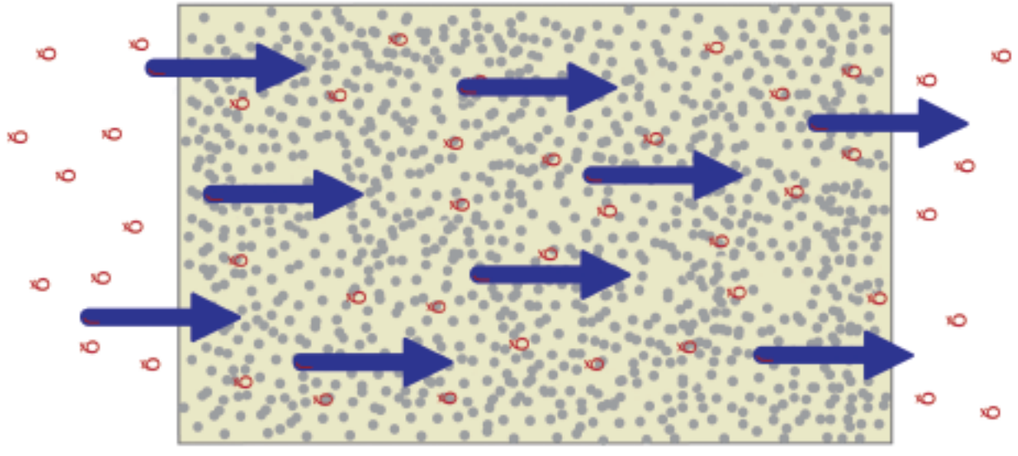
When using this method, the study showed stable "flocs" of *crypto* were able to form and be held in simulated sand filters. According to another presentation at the 2006 World Aquatic Health Conference, there was a 99.99 percent removal of *crypto* from pool water using sand filtration treated with the two-stage polymer.

Layers of protection

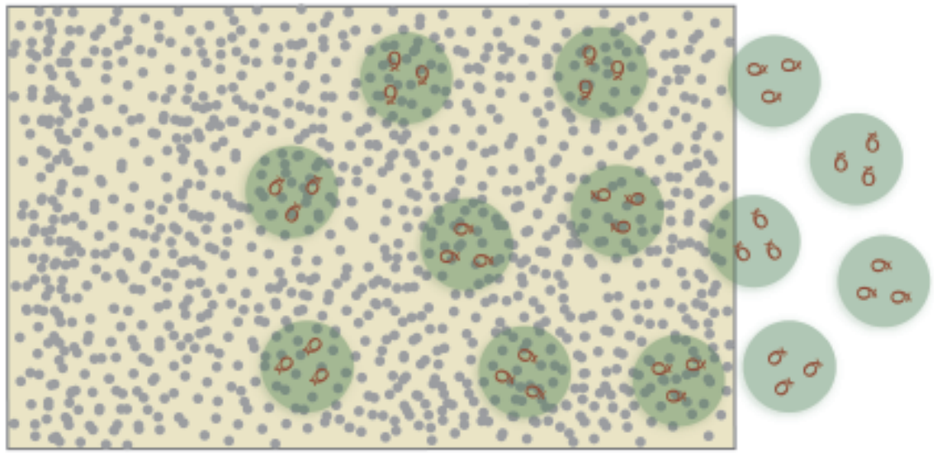
RWIs, especially *crypto*, continue to be a major challenge for pool professionals.

Multiple layers of technology most likely will be the key to providing safe and disease-free swimming pools.

These layers will include a residual of chlorine sanitizer, ozone or UV, regular dilution of pool water, and enhanced filtration of microorganisms using a polymer system.



Cryptosporidium in Pool Water



SOURCE: SEAKLEAR POOL & SPA PRODUCTS

Cryptosporidium in Two-Stage Polymer Treated Pool Water

Sticking together: To reduce the risk of RWIs, new technology involving polymers can be used to enhance filtration. *Cryptosporidium* cysts are bound together so they can be more easily removed from the water.