

Chlorine, a basic ingredient for many household cleaning products, is contained in swimming pool chemicals, such as calcium or sodium hypochlorite, which act as 'antimicrobial pesticides', killing bacteria and controlling algae in the water.

Since pool water is open to contamination from the air and all the swimmers in it, chlorine, along with other chemicals such as iodine and algaecide, are added in high concentrations to fight off disease spreading organisms.

The average, backyard in-ground pool holds about 33,000 gallons of water, according to the Infinity Swimming Pool company. To ensure the water is clean, about 12- to 95-percent chlorine must be used because factors such as evaporation and sun exposure can cause the chemicals to degrade. According to the EPA, the average household cleaner contains about two percent chlorine, while standard bleach contains only about five percent.

The chlorine's pH level is one cause of eye irritation. PH—a measurement of how acidic or basic a substance is—can be measured on a scale of one to 14. Since the pH of normal water is seven, this is considered a neutral pH; anything less than seven is acidic and anything higher than 7 is basic. The pool's pH must be at an appropriate level in order for the chlorine to be effective. A pH level between 7.2-7.8 is considered acceptable.

Chlorine is 100-percent effective against bacteria at a pH of 6.5, but this is far too low for our skin to handle—it would be like taking a refreshing dip in acid. At the level used in pools, chlorine is less able to break down bacteria, fats, oils and everything else we take into the water with us. According to the Australian Broadcasting Corporation's Science Forum, if these compounds are not completely broken down, they can also cause stinging eyes and irritation.

Likewise, an over-chlorinated pool can put you at risk for eye irritations: If there is too much of the compound, our eyes can itch and sting from over-exposure. Normal chlorinated pool water should not do any permanent damage to eyes, but some may be more sensitive than others.

Although not usually a problem, there are all kinds of bugs living in swimming pools...and also in freshwater swimming sites, like lakes and rivers. One of these creatures, called acanthamoeba, can cause sever pain and damage to your eyes, and may even result in the need for a corneal transplant, says Dr. Burt Dubow from the website All About Vision.

Blurry vision as a result of freshwater swimming is usually attributed to the cleanliness of the water. Certain types of bacteria and algae can be especially harsh on your eyes. One of the most common is called cyanobacteria, also known as pond scum. Cyanobacteria is often a result of warm, stagnant waters—so the best way to avoid this is to swim in lakes that are sparkling clear and pristine.

Prevent irritation when swimming in fresh or chlorinated water by wearing goggles when

swimming—especially if you wear soft contact lenses. Dubow says that water can change the way your contact lenses fit, making them too tight and causing eye problems.

Flushing your eyes with cool, fresh water after your swim is an easy way to calm any eye irritation. Saline eye drops are also a simple fix for sore eyes, making them an essential beach item for this summer season.

By Lindsey Bewley