

HOW CHLORINE CLEANS POOLS

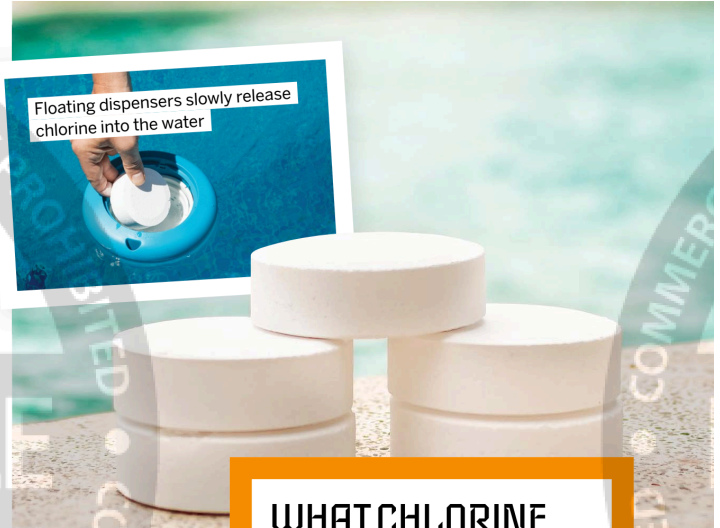
It's the killer chemical that keeps you safe while you swim

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Since the early 1900s, chlorine has been used as a chemical disinfectant and to clean swimming pools. Chlorine is bacteria's worst nightmare. When chlorine hits the water it breaks down into hypochlorous acid and a hypochlorite ion, an atom with an electrical charge. Both the acid and ion are bad news for bacteria and their internal structure, breaking them apart and causing their death. The time it takes to tackle bacteria varies from species to species. Chlorine kills most *Escherichia coli* in less than a minute, but can take around 45 minutes to kill pool parasites called giardia.

Did you know?
A pool's pH should be 7.4, the same as human tears

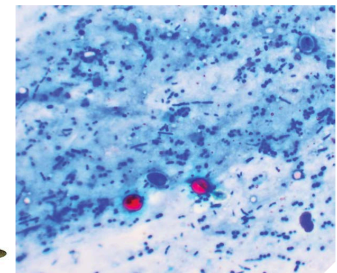
Along with destroying bacteria, algal blooms are kept at bay by chlorine, which prevents the water from slowly turning green. However, there's one other element that needs to be just right for the chlorine to work, and that's the pH level. If the water's pH is too alkaline, the hypochlorous acid isn't as effective. On the other hand, if it's too acidic it will kill bacteria, but will also be hazardous to the health of human swimmers. Chlorine itself comes with some health concerns and side effects. Chlorine can cause reactions to sensitive skin, such as itching and redness called irritant dermatitis.



Floating dispensers slowly release chlorine into the water

WHAT CHLORINE CAN'T KILL

One formidable parasite called cryptosporidium is impervious to the acidic attacks of chlorine. Once in the gut of its human host, it releases millions of reproductive cells called oocytes, attached to faeces. When a host enters a swimming pool, oocytes are passed into it, and just 150 millilitres of infected faeces release 150 million oocytes. Cryptosporidium can persist for more than ten days before chlorine has any detrimental effect. Extensive water filtration and ultraviolet light treatment are the most effective methods used to remove the parasite from pools.



A microscopic view of cryptosporidium (red) in a stool sample

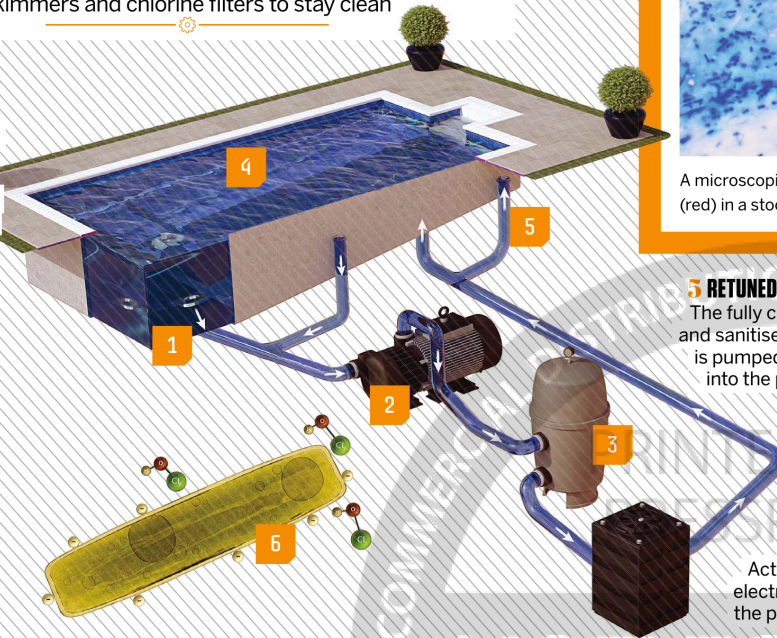
THE POOL WATER CYCLE

How water is pumped through a system of skimmers and chlorine filters to stay clean

4 CHLORINE ADDITION
Chlorine can be added to the system in a number of ways, including dropping tablets directly into the pool or using an automatic dispenser.

1 SKIMMER
Water drains past a surface separator to collect the largest debris, like leaves.

6 CELLULAR BREAKDOWN
The cell walls of bacteria and algae are broken down when they interact with the hypochlorous acid and hypochlorite ions.



5 RETURNED WATER
The fully cleaned and sanitised water is pumped back into the pool.

3 FILTER
Water passes through different membranes and sand filters to catch debris.

2 PUMP
Acting as the pool's heart, an electrical pump pulls water from the pool and circulates it around the filtration system.

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