

# Swimming Pools: Where P-Chem becomes Pee-Chem

By ACSH Staff — June 25, 2015



It's summer time and the living is easy. Time to fire up the BBQ, pull

the summer clothes down from the attic (hopefully they still fit) and relax around the pool and if we are talking pools, then we also have to talk about chlorine.

Chlorine and pools go hand in hand. Any pool owner will tell you that keeping your chlorine levels (and the pH) right is a summer's long struggle, but also necessary. A lot of people wonder though what does chlorine really do for your pool and what does it really do to you, the swimmer?

Chlorine is a very unstable, reactive element. As such, it reacts with almost everything. This includes water, where it forms hypochlorous acid (HClO) a form of bleach which works against bacteria and fungi by oxidizing fats and proteins in and on the cells at speeds on the scale of milliseconds. Furthermore, the [list of microorganisms](#) [1] HClO is effective against is impressive: MRSA, VRE, H1N1, TB, Herpes, Polio and many others. However, due to its broad mechanism and speed of action, HClO does not contribute to antimicrobial resistance. HClO is also very safe at low concentrations, in fact your body produces it everyday as part of the normal function of white blood cells.

Despite all these benefits to chlorinating pools, many people automatically associate chlorine in pools with negative health consequences, in particular that red eye experienced when swimming in an over-chlorinated pool.

However, it's not only the chlorine, that causes the red eye. Chlorine also reacts with urea, which is found in urine and functions as the main way that humans and animals get rid of excess nitrogen. It is a white, harmless solid.

Pool urination, the disgusting habit that almost a quarter of us admit to doing, is what actually causes your eyes to get so red and itchy. Why? the chlorine interacts with the urea in urine to

make the compound chloramine. This is also the chemical that creates the smell of chlorine you sometimes experience which is normally attributed to over-chlorination. Furthermore, unlike hypochlorous acid, chloramine has some associated health risks and should be avoided, although at these low concentrations there is nothing to worry about.

But the story gets worse. It's not just pool urination that creates chloramine; sweat, dirt and diarrhea in pools also contribute to the levels of this compound in your pool. The [CDC actually](#) [2] recommends that anyone experiencing diarrhea should not enter a pool until regularity returns.

The CDC campaigns about pool safety during the summer and has even put out a funny video about water safety that is worth checking out [here](#). [3] One important message they have is that if you do smell the chloramine or experience the red eye you should actually add *more* chlorine to your pool because the levels of the beneficial, antimicrobial HClO are low.

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**Links**

[1] <http://www.hsp-usa.com/faq/>

[2] <http://www.cdc.gov/healthywater/swimming/>

[3] <http://www.cdc.gov/healthywater/swimming/rwi/video-contest.html>