

# How Does Chlorine in Water Affect my Health?

## What is Chlorine?

Chlorine is a naturally occurring element; symbol Cl, atomic number 17 on the periodic table. It's a very dangerous toxin that has many uses, from disinfecting to bleaching. In small quantities, liquid and gas forms can be poisonous. In its gas form, chlorine is a pale green color and has a smelly odor and makes your breathing labored. In its solid form, it's more of a yellow green color. It is abundant in nature in its chloride ion form found in many of the salts that are in the earth. Many animals, including humans need chlorine. But there is a limit to what we can physically tolerate.

## How am I Exposed to Chlorine?

Even taking a long bath or shower increases a person's risk for chlorine exposure because chlorine can enter the body through skin absorption or through the eyes, nose, and ears.

Chlorine has long been used to disinfect our drinking water because it controls the growth of such unwelcome bacteria as Ecoli and Giardia. You have to be careful also, to take precautions even when showering or drinking tap water.

### 3 Common Exposures to Chlorine:

- Absorption through skin from water and from the air
- Drinking & Eating
- Breathing in the fumes that chlorine can create

It should be noted that the dangers of chlorine exposure also exist for people who do not normally swim, but instead choose to sit by the pool sunbathing or socializing. In some instances, non-swimmers have tested positive for high levels of trichloramines. What all of this means is that people need to be more aware of some of the seemingly innocent dangers that they are commonly exposed to. Chlorine, by many schools of thought, has become a dinosaur for swimming pool sanitation. There are alternative methods that can be used to keep pools disinfected, including silver-copper ion generators.

## What are Possible Symptoms of Exposure to Toxic Levels of Chlorine?

Research has shown, however, that long-term exposure to chlorine leads to the production of free radicals within the body. Free radicals are carcinogenic, and cause tremendous damage to our cells.<sup>1</sup>

### Did You Know?

*The risk of developing cancer is 93% higher in people who drink or are otherwise exposed to chlorinated water?<sup>2</sup> Chlorine is a potential health hazard to both children and adults, and it is an issue that should be taken quite seriously.*

According to a Belgian study that was released in 2003, certain irritants called trichloramines are released any time chlorinated water reacts with organic materials (such as sweat or urine) from people.<sup>3</sup> Trichloramines are believed to initiate a biological process that effectively destroys the cellular barriers surrounding the lungs.

Children exposed to large amounts of chlorine could potentially suffer asthmatic attacks. In one research study, rats exposed to chlorine and chloramines developed tumors in their kidneys and intestines.

Chlorine can irritate severely, even burn, skin exposed directly to it. It can irritate and burn the eyes and throat as well.

## Chlorine, Cancer, and Heart Disease

*"We are quite convinced, based on this study, that there is an association between cancer and chlorinated water." - Medical College of Wisconsin research team*

The addition of chlorine to our drinking water began in the late 1800s and by 1904 was the standard in water treatment, and for the most part remains so today. We don't use chlorine because it's the safest or even the most effective means of disinfection, we use it because it is the cheapest. In spite of all our technological advances, we essentially still pour bleach in our water before we drink it. The long term effects of chlorinated drinking water have just recently been recognized. According to the U.S. Council Of Environmental Quality, "Cancer risk among people drinking chlorinated water is 93% higher than among those whose water does not contain chlorine."

Dr. Joseph Price wrote a highly controversial book in the late sixties titled Coronaries/Cholesterol/Chlorine and concluded that nothing can negate the incontrovertible fact, the basic cause of atherosclerosis and resulting entities such as heart attacks and stroke, is chlorine." Dr. Price later headed up a study using chickens as test subjects, where two groups of several hundred birds were observed throughout their span to maturity. One group was given water with chlorine and the other without. The group raised with chlorine, when autopsied, showed some level of heart or circulatory disease in every specimen, the group without had no incidence of disease. The group with chlorine under winter conditions, showed outward signs of poor circulation, shivering, drooped feathers and a reduced level of activity. The group without chlorine grew faster, larger and displayed vigorous health. This study was well received in the poultry industry and is still used as a reference today. As a result, most large poultry producers use dechlorinated water. It would be a common sense conclusion that if regular chlorinated tap water is not good enough for the chickens, then it probably is not good enough for us humans!

There is a lot of well founded concern about chlorine. When chlorine is added to our water, it combines with other natural compounds to form Trihalomethanes (chlorination byproducts), or THMs. These chlorine byproducts trigger the production of free radicals in the body, causing cell damage, and are highly carcinogenic. "Although concentrations of these carcinogens (THMs) are low, it is precisely these low levels that cancer scientists believe are responsible for the majority of human cancers in the United States". The Environmental Defense Fund

Simply stated chlorine is a pesticide, as defined by the U.S. EPA, whose sole purpose is to kill living organisms. When we consume water containing chlorine, it kills some part of us, destroying cells and tissue inside our body. Dr. Robert Carlson, a highly respected University of Minnesota researcher whose work is sponsored by the Federal Environmental Protection Agency, sums it up by claiming , "the chlorine problem is similar to that of air pollution", and adds that "chlorine is the greatestcripler and killer of modern times!"

Breast cancer, which now affects one in every eight women in North America, has recently been linked to the accumulation of chlorine compounds in the breast tissue. A study carried out in Hartford Connecticut, the first of its kind in North America, found that, "women with breast cancer have 50% to 60% higher levels of organochlorines (chlorination byproducts) in their breast tissue than women without breast cancer."

One of the most shocking components to all of these studies is that up to 2/3s of our harmful exposure to chlorine is due to inhalation of steam and skin absorption while showering. A warm shower opens up the pores of the skin and allows for accelerated absorption of chlorine and other chemicals in water. The steam we inhale while showering can contain up to 50 times the level of chemicals than tap water due to the fact that chlorine and most other contaminants vaporize much faster and at a lower temperature than water. Inhalation is a much more harmful means of exposure since the chlorine gas (chloroform) we inhale goes directly into our blood stream. When we drink contaminated water the toxins are partially filtered out by our kidneys and digestive system. Chlorine vapors are known to be a strong irritant to the sensitive tissue and bronchial passages inside our lungs, it was used as a chemical weapon in World War II. The inhalation of chlorine is a suspected cause of asthma and bronchitis, especially in children... which has increased 300% in the last two decades. "Showering is suspected as the primary cause of elevated levels of chloroform in nearly every home because of chlorine in the water." Dr Lance Wallace, U.S. Environmental Protection Agency.

Chlorine in shower water also has a very negative cosmetic effect, robbing our skin and hair of moisture and elasticity, resulting in a less vibrant and youthful appearance. Anyone who has ever swam in a chlorinated pool can relate to the harsh effects that chlorine has on the skin and hair. What's surprising is that we commonly find higher levels of chlorine in our tap water than is recommended safe for swimming pools.

Aside from all the health risks related to chlorine in our water, it is the primary cause of bad taste and odor in drinking water. The objectionable taste causes many people to turn to other less healthful beverages like soft drinks, tea or other sweetened drinks. A decreased intake of water, for any reason, can only result in a lower degree of health.

The good news is that chlorine is one of the easiest substances to remove from our water. For that reason it logically should serve its purpose of keeping our water free from harmful bacteria and water borne diseases right up to the time of consumption, where it should then be removed by quality home water filtration.

No one will argue that chlorine serves an important purpose, and that the hazards of doing away with chlorine are greater than or equal to the related health risks. The simple truth is that chlorine is likely here to stay. The idea that we could do away with chlorine any time in the near future is just not realistic. It is also clear that chlorine represents a very real and serious threat to our health and should be removed in our homes, at the point of use, both from the water we drink and the water we shower in.

## How To Eliminate Chlorine in Water

- First, avoid chlorine whenever possible. If you have a pool, don't put chlorine in it to kill bacteria. Use natural products whenever possible.
- Consider a water purification system for your home. It will help to eliminate toxins before the water is used to cook, clean, shower and bathe.
- One help is to use water filters in sinks and bathtubs. Water filters are an excellent way to ensure that your family is protected against the harmful effects of chlorine exposure.
- After you are exposed to chlorine, you should cleanse your body immediately. Use organic or all-natural soaps and detergents, as these are better for your skin. There are many kinds of soaps available that are not toxic.
- Always drink purified water. Even better is oxygenated purified water which provides added oxygen to your body.

## REFERENCES

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2. **Dangers of Chlorine.** <http://curezone.com/art/read.asp?ID=21&db=3&CO=7>. Jerry Smith. Accessed 29 May 2008.
3. **Dangers of Chlorine?** <http://www.drweil.com/drw/u/id/QAA361110>. Dr. Andrew Weil.

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- <http://www.ghchealth.com/chlorine.html>
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