

## 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 de-chlorinated 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 who's 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 greatestcrippler 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 swum 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 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.

## **Chlorinated drinking water: Health or hazard?**

**Josef Tyls III, MSc, PhD**

Bladder cancer has been linked to chlorinated drinking water in epidemiological studies.

How harmful is it to consume chlorine and chlorine disinfection byproducts in our water? Proponents of chlorine claim there is no danger. But not all the information has been disclosed to the general public.

### **Water and our health and wellness**

Clean water is absolutely essential for all proper body functions, including skin and organ integrity, immune system balance, cellular respiration and repair, waste elimination, and longevity.

The primary purpose of clean water within the body is to transport nutrients to the cells and then transport waste byproducts to the eliminatory system. It is absolutely essential in maintaining the critical balance needed to support life. Yet this system, with its multiplicity of interrelated dependencies, can be grossly affected by minute traces of chemical toxins like chlorine.

### **Hazardous byproducts of chlorination**

Chlorine is used to disinfect municipal water supplies and swimming pools from harmful bacteria. But chlorine is also a highly toxic element, which has an ability to oxidize all proteins, effectively rendering them useless. All living organisms are made up of proteins. Hence, any living organism that comes in contact with even trace amounts of chlorine is affected and, if exposed to sufficient quantities of chlorine, killed.

The major health issue regarding the chlorination of municipal water is that it exposes us to a variety of toxic chemicals called Trihalomethanes (THMs), which are byproducts of chlorination. Studies have linked THMs to miscarriage and fetal malformations, and they may be also associated with an increased risk of stillbirths.

One of the most common of the THMs, chloroform, is classed as a potential cancer-causing agent. In public pools it has been measured at more than twenty times the level found in tap water. Little data exists regarding dermal and inhalation exposure routes to the chloroform body-burden from domestic and recreational use of chlorinated water. And not all harmful bacteria are effectively disinfected by chlorine.

The bacteria *Cryptosporidium parvum*, excreted in the feces of infected humans, cattle, and other mammals, is highly resistant to chlorine at the levels normally found in swimming pools and drinking water. *Giardia lamblia* is also more resistant to disinfection by chlorine, but can be effectively filtered.

### **How safe is showering?**

Volatile chemicals like THMs can evaporate from water in a shower or bath. Conservative calculations indicate that inhalation exposures can be as significant as exposure from drinking the water; that is, one can be exposed to the same amount of THMs by inhaling during a shower as by drinking two litres of water a day. People who shower frequently could be exposed through ingestion, inhalation, and/or dermal absorption. Some studies found that the dangers from inhaling chlorine can even exceed those derived from drinking chlorinated water. The amount of chloroform, the most common Trihalomethanes in chlorinated water, inhaled or absorbed through the skin during a typical shower, may be six times higher than that absorbed from chlorinated drinking water.

### **The cancer connection**

Epidemiological studies funded by Health Canada concluded that 14 to 16 percent of bladder cancers in Ontario may be attributable to drinking water containing relatively high levels of chlorination byproducts. According to the results of a 1992 Norwegian study published in the *International Journal of Epidemiology*, the consumption of chlorinated drinking water has been associated with a 20- to 40-percent increase in the incidence of colon and rectal cancer.

A study done by the Medical College of Wisconsin and Harvard University found that the consumption of chlorinated drinking water accounts for nearly 15 percent of all rectal cancers and nine percent of all bladder cancers in North America. The study also concluded that drinking chlorinated water over long periods of time increases the chances of contracting rectal cancer by 38 percent and contracting bladder cancer by 21 percent. In addition, among those who drank chlorinated water, the researchers found a higher incidence of cancer of the esophagus, rectum, breast, and larynx, as well as Hodgkin's disease.

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**“Putting chlorine in the water supplies is like starting a time bomb. Cancer, heart trouble, premature senility; both mental and physical, are conditions attributable to chlorine treated water supplies. It is making us grow old before our time by producing symptoms of aging, such as hardening of the arteries.”**

**Dr. Herbert Schwarts, Biological Chemist**

