



## Chlorine & Toxic By Products in Water

*“Although several disinfection by-products have been shown to be carcinogenic in animal experiments, the overriding priority in providing clean drinking water must be good microbial quality, to prevent waterborne diseases”*

That’s according to a report published by the European Environment Agency and the World Health Organisation. Meanwhile, respected American biologist Dr Herbert Schwartz, states that cancer, heart complaints and premature senility are all conditions attributable to water that has been treated with chlorine. And Martin Fox says in his book ‘Healthy Water’ that *“Chlorination could well be the key factor linking heart disease and cancer.”*

Powerful beliefs, certainly. Nevertheless, these academics are perhaps right to be concerned about the effects of chlorine and its frequently toxic by-products in water. It is accepted that chlorine creates THMs and Haloforms. These potent chemical pollutants can trigger the production of excess free radicals in our bodies, which cause cell damage. Excess free radicals can also prompt normal, smooth muscle cells to mutate. The fibrous plaque formed is essentially a benign tumour. Researchers such as Martin Fox believe these tumours can be linked with the origins of heart disease.

The US National Cancer Institute conducted a series of animal experiments to demonstrate that chloroform, one of the most common THMs, might cause cancer. Epidemiologists, who compared the findings with the geographical distribution of cancer rates across the USA, later found a link between chlorination and high rates of bladder, colon and rectal cancer. A further study of 4000 men by Kenneth Cantor revealed that those whom had smoked and drunk chlorinated water for 40 years faced twice the risk of bladder cancer as men who had smoked but who had drunk non-chlorinated water.

In 1992, a study of 4,028 Iowa women showed low birth weight for babies whose mothers drank tap water containing 0.1ppm of THM through pregnancy. This is the limit considered safe for drinking in the UK.

The first ever assessment of chlorination and chlorination by-products was carried out by the US not for profit organisation, The Environmental Working Group (EWG). Worryingly, the Group found that 137,000 US pregnancies were at a higher risk of miscarriage and birth defects from drinking chlorinated tap water. As a result of the study, the EWG recommended that pregnant women should drink plenty of water, reduce their exposure to chlorination by-products (CPBs) by using a carbon filter and, since CPBs can be inhaled or absorbed through the skin, should also take shorter showers and baths.

Children are particularly vulnerable to chlorination and its by-products. In fact, when drinking water, children consume 3 times as much water per pound of body weight as an adult, so their exposure to chemicals in un-filtered water is much greater. In addition, their developing bodies are simply more sensitive. Limits for chemicals in water are set as though exposure is to only one contaminant at a time; unfortunately this is not generally the case.