

## Troubled Waters: Danger on Tap?

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### *Danger on Tap? The Choice is Clear*

*by Michael Downey*

Canada's water is safe. Even most environmentalists agree. But many experts caution against consuming too much water from the faucet.

Bacteria are not a worry with our heavily chlorinated municipal water. So what's the problem?

Sewage treatment plants release heavy metals (cadmium, chromium, copper, mercury, lead and zinc) directly into lakes and rivers from which we draw drinking water. Companies pour everything from cyanide to acids into sewers. Lake Ontario, for instance, contains long-term (mostly banned) pollutants, which generally show up in fish: DDT, dioxin, mercury, PCBs and others. Canadians flush prescription drugs into the water table. "Hormone disrupters" from pesticides, plastics and detergents, leak into our water. Municipalities inject "additives". Plumbing leaches lead. Some pipes use PVC (polyvinyl chloride plastic) despite health concerns. Home filters add metals. Tests are conducted but of the 70,000 chemicals Canadians use, tens of thousands haven't been studied sufficiently. Finally, there are traces of radioactive tritium, naturally occurring and from CANDU reactors.

Which leaves us where? Let's look at specific risks and what you can do.

### **CHLORINE**

Chlorine keeps water bacteria-free. But it reacts with organic material creating chloroform, trimethohalanes (TMHs) and other "chlorination disinfection by-products" (CBPs), all strongly linked with cancer.

A Health Canada Position Paper, *Safe Drinking Water: A Public Health Challenge*, states: "14–16% of bladder cancers may be attributable to water containing CBPs. There is an urgent need to resolve this ... In fact, given the prolonged exposure to CBPs and the epidemiologic evidence of associations with several cancer sites, future research may establish CBPs as the most important environmental carcinogens in terms of the number of attributable cancers per year." The paper links CBPs with spontaneous abortions, low sperm count, birth defects, respiratory problems and spina bifida.

Water treatment authorities consider chlorination a "necessary" trade-off. Necessary?

Treating water with ultraviolet light or ozone are safe methods of disinfecting without creating CBPs. Ozone is used in some European cities – Amsterdam, Paris, Berlin – and rare Canadian locales. But "necessary" chlorination is the norm in Canada.

## **LEAD**

Lead in tap water comes from lead solder, pipes and service connections. It's worse in very old or very new homes. In very old homes – pre-1950 – the problem is leaded lines and connections. In newer homes, excessive lead leaches in the early years until protective oxide has formed in the pipes.

Brass fittings also leach lead. And PVC piping is a poor alternative; chemicals leach from it too.

Short-term, lead can cause metallic taste, abdominal pain, diarrhea, convulsions, coma or death. However, very few cases of acute lead poisoning are documented in Canada annually.

Long-term, lead can cause anemia and impair mental function, memory and attention span. It is linked with poor appetite, fatigue, sleeplessness, irritability, headache and damaged kidneys.

Children absorb lead more easily.

Health Canada advises running cold tap water for 5 minutes before drinking – and never drinking hot tap water.

## **FLUORIDE**

Fluoride is added to 40 per cent of Canada's drinking water to reduce tooth decay. However, scientific advisors say that actual ingestion of this toxin has virtually no benefit. According to Canada's leading fluoride authority, Dr. Hardy Limeback, the dental benefit of fluoride derives from direct physical contact with the exterior of the tooth.

“You may as well swish with fluoridated tap water and spit it out. That's how it works.”

Drinking fluoridated water has been linked in government and scientific reports, to tooth and bone porousness, early aging, arthritis, osteoporosis, Alzheimer's, memory and neurological impairment, kidney disorders, genetic damage and cancer.

Also, fluoride further promotes leaching of lead from water pipes and solder.

A University of Toronto study headed by Limeback found twice the buildup of bone-weakening fluoride in the hipbones of Torontonians compared to Montrealers. Toronto and Calgary are fluoridated; Montreal and Vancouver are not.

Dr. Dean Burk, former Chief Chemist at the National Cancer Institute, said: “Fluoride causes more cancer, and causes it faster, than any other chemical.”

All Canadians ingest some fluoride via foods and beverages made with water in fluoridated areas – and then shipped across the country.

## **DRUGS IN YOUR WATER**

Scientists are finding urban rivers and ground water spiked with a diluted cocktail of pain relievers, caffeine, antibiotics, birth control pills and toiletries passed from humans through sewage plants and into the water supply.

While barely detectable, the contaminants are numerous and widespread. And they are raising new environmental and health concerns. Synthetic and naturally produced human sex hormones appear to be changing the reproductive organs of fish downstream from the outfalls of treated wastewater.

Environmental and human risks are unknown. The steady infusion of medicine-chest chemicals into rivers and aquifers tapped for drinking water is not monitored. And little data exists for gauging the chemicals' toxicity.

Chemicals showing up in tap water include caffeine, chemotherapy drugs, sunblock, codeine, antacids, antidepressants and birth control and estrogen replacement hormones. The amounts are minute. But what is the combined effect on long-term health?

## **METALS**

Trace amounts of metals are common in drinking water and usually won't affect your health. It's only at extremely high levels that metals cause a problem.

Naturally occurring metals dissolve in water when it comes into contact with rock or soil. However, corroded pipes and leakage from waste disposal sites can result in excess levels of metals such as copper, cadmium, nickel, mercury and others.

## **OPTIONS**

Short term, Canadians needn't worry. But what is the healthiest option for a lifetime of water consumption? Well, it's definitely not home filters.

The (US) Center for Environmental Health says some home water filtration systems actually add lead to water. Brass elements are the likely culprit. (Brass is copper and lead.) Also, few grasp a key fact: No filter exists that can remove fluoride from water.

Some think boiling removes impurities. But the only thing boiling removes from water is water (steam). In fact, boiling concentrates impurities.

What about bottled spring water? It's sometimes disinfected with ozone instead of chlorine – but not always. And there's still fluoride. The label should indicate fluoride below 0.1 parts per million. Fluoridated tap water ranges from 0.7 to 1.0 ppm. Canadian bottled water is regulated under the Food and Drugs Act – but it's legal to sell tap water as “spring water” because springs are the source of all water.

## Chlorine and Trihalomethanes (THMs)

Chlorine is a powerful disinfectant commonly used in municipal water treatment plants to kill bacteria and other harmful microorganisms. Unfortunately, it can react with organic material in the water creating chloroform, trihalomethanes (THMs) and other "chlorination disinfection by-products" (CDPs), all of which have been strongly linked with incidence of cancer.

A Health Canada Position Paper, *Safe Drinking Water: A Public Health Challenge*, states: "14-16% of bladder cancers may be attributable to water containing CDPs. There is an urgent need to resolve this ... In fact, given the prolonged exposure to CDPs and the epidemiologic evidence of associations with several cancer sites, future research may establish CDPs as the most important environmental carcinogen in terms of the number of attributable cancers per year." The paper also links CDPs with spontaneous abortions, low sperm count, birth defects, respiratory problems, and spina bifida.

In addition to ingesting chlorine in our drinking water, we are exposed to chlorine when we shower. Most people are unaware that more chlorine is absorbed through the skin during the average shower than by drinking six to eight glasses of tap water. Skin is highly permeable - it is the body's way of excreting toxins and regulating temperature. Hot showers cause the pores of the skin to dilate, allowing chlorine and other free radicals to be rapidly absorbed.