

# IS DRINKING WATER FLUORIDATION NOTHING TO SMILE ABOUT?

For years anyone who dared question the addition of fluoride to our nation's water supplies was told to go sit in the kook corner, right next to the conspiracy nuts and the mind control freaks. No matter how rational one's protests might have appeared, to be anti-fluoride was to be anti-teeth, anti-kid, and maybe even anti-American. These days, however, many people are wondering if the folk on the so-called anti-fluoride fringe might be right. And that feeling just got a big boost with the recent news that fluoridated water appears to lower children's intelligence.

The study, published in the May 2003 journal *Fluoride*, found that as fluoride levels in drinking water increased, IQs fell and the incidence of mental retardation and borderline intelligence increased. Researchers tested 512 children between the ages of 8 and 13 from two villages in rural China. One village had drinking water with high levels of fluoride. The other had drinking water with very low amounts. Children in the high fluoride village were further divided into five subgroups based on the concentrations of fluoride their water contained.

When intelligence test results from all 512 children were examined, scientists found "a significant inverse correlation" between IQ and levels of fluoride found in participants' urine samples. In other words, the more fluoride that was found, the lower the test subject's IQ was likely to be. To assure the purity of this conclusion, the study's designers made sure that the chosen villages were not subjected to coal-burning pollution or populated by drinkers of brick tea, two common sources of environmental fluoride. They also excluded children with a history of brain disease or injury, and controlled for family income and parental education. In fact, the only significant difference between test subjects in the two villages, which are located in the same province and county, was the levels of fluoride in their respective drinking water supplies.

In presenting their paper, the authors of the study wrote that fluoride appears to cross the blood-brain barrier and produce a chemical impairment of the nervous system during infant and childhood development. Importantly, the researchers noted lowered IQs even in children who drank water with fluoride levels similar to those intentionally added to U.S. water supplies to prevent tooth decay. And that brings up an important question: Should our drinking water be fluoridated?

Fluoridation of drinking water to prevent tooth decay began in the United States in 1945 with a test in Grand Rapids, Michigan. Today, approximately 162 million persons (65.8% of the population served by public water systems) drink water from public supplies treated with fluoride, up from 144 million, or 62.1% in 1992. National health goals call for 75% of the public to have access to "optimally fluoridated drinking water" containing between 0.7--1.2 parts per million by 2010.

In spite of unwavering support from the American Dental Association and federal agencies like the Centers for Disease Control, many experts are increasingly saying that all this fluoridation is most emphatically not a good idea. Here's some of the key evidence they cite:

- The types of fluoride used to treat water systems, fluosilicic acid and sodium silicofluoride, are actually untreated hazardous waste from the phosphate fertilizer industry. Obtained from giant scrubbers that capture fluoride gases released during manufacturing processes, this fluoride (which is legally classified as a toxic waste and is considered a hazardous pollutant in the environment) is often contaminated with other toxins like lead and arsenic, and is sold in an unrefined state to communities around the country for use in drinking water. (Many activists, in fact, believe the federal government's insistent support of water fluoridation has more to do with helping industries profit from (rather than pay for) their hazardous waste disposal.)
- The mechanisms by which fluoride strengthens teeth were misunderstood when mass fluoridation programs were first proposed over half a century ago. Research in the modern era has proven that fluoride's benefits are derived from surface treatments, not from the internal exposures that are created by ingesting this chemical via water. According to current science, drinking fluoride actually does little or nothing to boost dental health.
- Quite the contrary, accumulating fluoride has been shown to damage rather than help teeth by causing an irreversible disease called fluorosis. Dental fluorosis is a cosmetic condition characterized by discolorations on the teeth formed when excessive fluoride exposure poisons enamel-forming cells called ameloblasts. The incidence of this disease in the U.S. has risen as fluoridation has become more widespread. According to government figures, approximately 1 in 3 children living in fluoridated areas have fluorosis on at least 2 teeth.
- A more serious fluoride-caused condition is known as skeletal fluorosis. Victims of this disease experience gastrointestinal disorders, infertility, kidney impairment, and an immobilization of joints and the spine that combine to make

movement painfully difficult and give victims a permanent hunchback. Because these symptoms mimic those of arthritis, this condition is often misdiagnosed.

- Other illnesses and conditions linked to excessive fluoride exposure include abnormal bone development, brain damage, early onset of puberty, hyperthyroidism, elevated blood lead levels, female infertility, and certain cancers including bone and liver cancer.
- We are exposed to fluoride via far more sources than just drinking water. Many of the processed foods and beverages sold in the U.S. contain high levels of fluoride because they are made using fluoridated water supplies. Further, the processing these foods undergo often has the effect of concentrating the fluoride. Food types with particularly high levels of fluoride include processed cereals, juices from concentrate, and soda. Mechanically deboned chicken is also a key source of concern. That's because fluoridated water used on farms and to process animal feeds accumulates in animal bones, and chicken bones are especially brittle. As chicken is mechanically deboned, the deboning machine grinds significant portions of these fragile bones into a powder which then infiltrates the finished product. As a result, processed chicken products often have elevated levels of fluoride. (Mechanically deboned turkey and beef products aren't nearly as much of an issue because their bones are much stronger.) Researchers studying the problem found that chicken-based infant foods have the highest fluoride levels found in this category of food, followed by chicken nugget/finger-type products, lunch meats, and canned meats.
- Remarkably, fluorinated drinking water has not been shown to have any effect on tooth decay or the incidence of cavities. Tooth decay rates in Western Europe, where 98% of the population drinks unfluoridated water, have declined as much and even more in some locales as rates in the U.S. since fluoridation began. British Columbia, where about 10% of the population drinks fluoridated water compared to 40-70% in the other provinces, has the lowest rates of tooth decay in Canada. In the largest fluoridation study ever undertaken, the National Institute of Dental Research tracked 39,000 children between the ages of 5 and 17. The results? No statistically significant differences in the dental health between children serviced by unfluoridated and fluoridated water systems. Though fluoridation advocates commonly point out that public dental health in the U.S. has improved markedly since fluoridation began, many experts attribute this positive development not to treated water supplies but to increased public education and greatly improved dental hygiene practices being adopted by more and more Americans.

This and other evidence is leading many to question the fluoridation of our drinking water. If your community's water supplies contain intentionally added fluoride, health advocates recommend filtering this contaminant out. Fluoride can be removed by many carbon filtration, reverse-osmosis, and KDF® filter systems as well as by distillation. (Make sure to verify with the manufacturer that the specific system you're considering is rated for fluoride removal.) Fluoride-free toothpastes are also recommended for children and concerned adults.

For more information about fluoride issues visit <http://www.fluoridealert.org/>