



Health Matters

Great Smokies Medical Center of Asheville

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Fluoridation of Health: Bad to the Bone

Fluorine/Fluoride

Fluorine (F) is a gaseous element in the periodic table. It is a halogen (Latin for "salt former") along with its halogen cousins: chlorine, bromine, and iodine. Fluorine's small size contributes to its being the most reactive of all elements. Fluoride is formed when fluorine binds to minerals. The mineral fluor spar, calcium fluoride (CaF₂), is the most abundant fluoride salt on earth.

Uses of Fluoride

Fluoride is used in glass etching, in the manufacture of synthetic fabrics (including Gore-Tex™), in the smelting of all metals (e.g., steel, aluminum, gold), and in the plastic and phosphate (fertilizer) industries. Some prescription drugs are fluoride based, including Prozac, Cipro, Prevacid, Paxil, Crestor, Lipitor, Celexa, Celebrex, Diflucan and several general anesthetics. Fluoride is essential for the enrichment of uranium needed for nuclear power reactors. It is in rat poison, pesticides (Cryolite™, 82 percent of which is used on grape crops, and sulfuryl fluoride), Teflon™, military nerve gas, and is added to municipal water, toothpaste, and mouthwash.

A Concerned Physician

Armed with passion for the well-being of people and the truth, Danish physician Kaj Roholm documented numerous toxic effects of industrial fluoride pollution in Europe in a 364-page paper published in 1937. He recommended that industry leaders protect people from fluoride's devastatingly toxic effects on the brain, skin, lungs, bone, teeth, glandular, and digestive systems. Roholm said, "*The once general assumption that fluorine is necessary to the quality of enamel rests on insufficient foundation . . . the enamel organ is electively sensitive to the deleterious effects of fluorine.*"

Concerned Industrialists

After the turn of the century in the United States, workers in aluminum and phosphate industries and animals grazing on land downwind from industries' fluoride-rich stack emissions got sick. Industrialists were naturally concerned. In an effort to offset paying settlements from an onslaught of lawsuits by injured workers, industrial



leaders needed to convince the public that fluoride exposure was not only harmless but beneficial.

In 1945, a ten-year long study began when fluoride was artificially added to the municipal water supply of Newburgh, NY. Children aged seven to 14 who drank the treated water were monitored for dental effects, growth, hemoglobin levels, and joint health. There is now evidence that several concerning effects of fluoride never made it into the whitewashed final public report. Ongoing evaluation of the original data and also of additional data collected during the ensuing years reveals no significant general or dental health benefits of fluoridation, but documents health concerns from fluoridated water.

Government Experts

Industrialists and their attorneys strategized correctly that the general public would likely rely on doctors' authority to help them form opinions on fluoridation. By creating a media campaign that touted fluoride's safety, industrialists were also tipping the odds that jury members in a trial of fluoride litigation would uphold fluoride's reported safety in a courtroom. After all, didn't the government add it to drinking water? The orchestrated campaign that resulted in fluoride being dispensed to the public was very effective.



Unquestioning endorsement of fluoridation became the norm, despite criticisms from leading scientists who pointed out that fluoride is extremely toxic and that its therapeutic benefits had never been established. While 98 percent of western European cities have *banned fluoridation* of water, currently more than 66 percent of municipal water supplies in the United States are now fluoridated.

Toxic Sludge Is Good For You

The Environmental Protection Agency (EPA) found fluoride to be toxic to farmlands and crippling to animals, and mandated stack scrubbers to decrease the amount of fluoride spewing into the environment. Compliance cost industries millions of dollars. Fluoride-rich stack sludge was bound to silica and thus had little value in the marketplace. However, the red ink on the books suddenly turned black when toxic fluoride was collected, concentrated in ponds, pumped into tanker trucks and sold to cities following government sanctioned fluoridation of water following the Newburgh study.

Testing to determine the safety of fluoride was performed on sodium fluoride (NaF). However, more than 90 percent of the fluoride added to public water supplies today is unrefined hydrofluorosilic acid (H₂SiF₆), toxic sludge, largely from Florida's phosphate industry. This sludge contains not only fluoride but arsenic, beryllium, lead, cadmium, and other toxins.

Concerned Courts

In the 1970s, three legal cases were heard about the dangers of one part per million (ppm) fluoride in drinking water. All three trials concluded that water fluoridation increased cancer death rates and found no convincing evidence of benefit. At each trial the

(cont. p 2)

Fluoridation of Health, cont.

defense's fluoridation expert was asked to name a single valid broad-based, double-blinded scientific study with results suggesting a significant reduction in permanent tooth decay from the addition of fluoride at one ppm to public drinking water. Each time the expert was unaware of any such study. All three courts determined that fluoridation was not beneficial and actually harmful. Each decision was eventually overturned by the Supreme Court.

Sources of Fluoride Exposure

Sources of fluoride include toothpaste (half a tube can be fatal to a small child), mouthwash, topical dental solutions, Teflon-coated pans, black and green teas (decaffeinated and instant being the worst offenders—up to 7.7 ppm), wine (from Cryolite™—sodium aluminum fluoride—a pesticide used by grape growers), chewing tobacco, infant formulas reconstituted with fluoridated water, reconstituted foods including juices (42 percent of juices tested exceeded EPA limits, white grape juice being the most toxic), sodas (varying in fluoride content according to regional bottling water sources), industrial exposure during arc welding, fumes from coal burning, and manufacture of aluminum, steel, phosphorus, freon and glass. Airborne industrial fluoride emissions contaminate downwind food crops and pasturelands.

Health Concerns

Fluoride is absorbed through contact, inhalation, and ingestion. Infants, children, the elderly, and people with impaired kidney function and nutrient deficiencies (especially calcium and Vitamin D) are more vulnerable to the poisonous effects of fluoride. Fluoride's chronic health effects are cumulative. Scientists worry that the increasing exposures to fluoride have already surpassed the EPA recommended maximum exposure limits.

Acute fluoride toxicity can cause nausea and vomiting. Fatal cardiac arrhythmias from severely lowered serum calcium levels can occur.

The adverse health effects of *chronic* fluoride toxicity include dental fluorosis, skeletal fluorosis, and immune dysfunction from inhibition of white blood cell activity, in addition to neurological, pulmonary, dermatological, endocrine, renal, and gastrointestinal symptoms.

Dental fluorosis first appears as opaque white flecks in dental enamel. As the toxicity becomes more severe, the staining becomes yellow, and eventually brown. Dental fluorosis affects nearly one-fourth of American children.



Approximately 80 percent of ingested fluoride is absorbed from the digestive tract. About half of that enters the skeleton, and the other half is excreted in the urine.

Skeletal fluorosis from excess fluoride exposure results in dense, brittle bones, skeletal pain,

crippling deformity, and rigidity. Calcification of spinal ligaments may compress the spinal cord. Micro-fractures of the brittle leg bones can result in lower limb pain.

A study published in 1990 by the National Toxicology Program determined that rodents which were fed water containing one ppm concentration of fluoride (the amount approved to be added to municipal water) had a higher incidence of osteosarcoma, a type of bone cancer. A subsequent study by Harvard's Elise Bassin, Ph.D., confirmed that the incidence of osteosarcoma in children was five times higher than that in non-fluoride-exposed children, a conclusion supported by numerous other studies during the past 30 years.

Roger Masters, Ph.D., from Dartmouth University, did a study of over 400,000 children and found that ingestion of one ppm of fluoride decreased IQ test scores and magnified lead's toxicity ten fold.

In 1958, the medical use of fluorine in treating *hyperthyroidism* was discussed in the *Journal of Clinical Endocrinology*. Today, fluoride's effect of inhibiting thyroid function is known to occur because of fluorine's ability to out-compete its halogen cousin, iodine, and interfere with the pituitary's production of thyroid stimulating hormone (TSH).

In 1995, Harvard neurotoxicologist Phyllis Mullenix, Ph.D., showed that rats treated prenatally with fluoride showed behavior patterns associated with hyperactivity, and rats dosed after birth showed hypoactivity. Shortly after, Mullenix was dismissed from her job.

Innocent Victims

In a heart-wrenching saga, champion quarter horse breeder Cathy Justus of Pagosa Springs, CO, lost five prized horses to a variety of mysterious

crippling maladies including Equine Metabolic Syndrome, deformity, coughs, infertility, lameness, wasting, and neurological disorders. Justus consulted Lennart Krook, D.V.M., Ph.D., Professor of Pathology at Cornell University, to determine the cause of the animals' deaths. Post mortem analysis of one horse's exhumed leg bone confirmed fluoride toxicity. The surviving horses were also diagnosed with fluorosis and each improved when their drinking water was changed. Ultimately, Pagosa Springs chose to stop fluoridating its water.

7,000 Concerned EPA Scientists

Following revelations of an alleged cover-up of data from Harvard School of Dental Medicine that linked fluoridation with an elevated risk of osteosarcoma, more than 7,000 environmental and public health professionals called for a moratorium on municipal water fluoridation in 2005. They asked the EPA to recognize that fluoride poses a serious cancer risk. Scientists in the prestigious National Academy of Sciences (NAS) concluded that the current allowable level of fluoride in tap water conflicted with public health and should be lowered.

Reducing Fluoride Exposure

In summary, the benefits of fluoride are overstated while the risks are understated. Avoiding excessive fluoride exposure is prudent. Familiarize yourself with known sources of fluoride and limit your exposure. Stopping the intake of fluoride can reverse some of its toxic effects. Use non-fluoridated toothpaste. Deionization and distillation of water are the most effective methods of removing fluoride from drinking water. While deionization is more costly, distillation removes both toxic and essential minerals. Reverse osmosis is partially effective at removing fluoride. All filtration systems need maintenance to perform optimally.

Sources of More Information

[The Fluoride Deception](#) by investigative reporter Christopher Bryson is a tell-all expose of the history of fluoridation. More information can be found at: www.fluoridealert.org, www.ewg.org (enter search word "fluoride"), and www.fluoridation.com.



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