

Rachel's Environment & Health News

#724 - Fluoridation: Time For A Second Look?

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by Paul, Ellen and Michael Connett*

In 1997 the union representing scientists, engineers and lawyers at the U.S. Environmental Protection Agency (EPA) in Washington, D.C., voted to support a California citizen initiative to stop fluoridation of public drinking water. In 1999 the union's vice-president released a paper explaining the union's opposition to fluoridation.[1]

Fluoridation is the practice of adding fluoride to the public water supply to reduce dental decay. U.S. fluoridation trials began in 1945 and by 1992 approximately 56% of the U.S. public received its water from fluoridated systems.[2]

Typically, fluoride-containing (or -generating) compounds are added to water to bring the level up to 1 milligram of fluoride ion per liter (1 part per million). In 1986 EPA set a Maximum Contaminant Level (MCL) for fluoride in drinking water at 4 ppm.[3] The MCL was based on only one adverse health effect: skeletal fluorosis, a crippling bone disease.

Fluoridation of public water supplies has stirred passionate debate for over 50 years. Now new data is refining the debate. It appears that some of the early claims for fluoridation's benefits were inflated. In recent years tooth decay has declined in both fluoridated and non-fluoridated communities. In fact, the largest U.S. survey indicates that the benefit to fluoridated communities amounts to 0.6 fewer decayed tooth surfaces per child, which is less than one percent of the tooth surfaces in a child's mouth.[4]

The public health community justified medicating whole communities via public drinking water using certain arguments that recent research has now shown to be false. For example, in 1945 scientists believed that fluoride had to be swallowed to be effective. However, the Centers for Disease Control (CDC) has recently acknowledged that fluoride's mechanism of action is primarily topical, not systemic.[5] This means that you don't need to swallow fluoride to reap its tiny benefits.

A second early belief, now known to be false, is that fluoride is an essential nutrient. There is no evidence of any disease related to fluoride deficiency. Natural levels of fluoride in human milk (0.01 ppm) are approximately a hundred times less than baby formula reconstituted with fluoridated water.[6]

A third early belief was that dental fluorosis (a defect of the tooth enamel caused by fluoride's interference with the growing tooth) would occur in only about 10% of the children drinking water fluoridated at 1 ppm and would occur only in its mildest form. Today fluorosis occurs on two or more teeth in 30% of children in areas where the water is fluoridated, and not all in its mildest form.[7]

A fourth early belief was that 1 ppm fluoride in drinking water provided an ample margin of safety against toxic effects. Not only is there no safety margin for dental fluorosis but there is growing evidence that there may be no safety margin for changes to bone structure and impacts on the brain, thyroid, and other soft tissues, especially when it is coupled with nutrient deficiencies, particularly iodide.

THE EVIDENCE

1) In 1998 the results of a long-term, low-dose rat study were published.[8] Two groups of rats were exposed to two different kinds of fluoride at 1 ppm in distilled water. A third group received only distilled water. Amyloid deposits (associated with Alzheimer's Disease and other forms of dementia) were elevated in the brains of both fluoridated groups compared to the control group. The authors speculate that fluoride enables aluminum to cross the blood-brain barrier.

2) Millions of people in India and China suffer a crippling bone disease called skeletal fluorosis, caused by moderate to high natural levels of fluoride (1.5 to 9 ppm) in their water.[9] Skeletal fluorosis has several stages of severity, with the less severe being chronic joint pain. "Because some of the clinical symptoms mimic arthritis, the first two clinical phases of skeletal fluorosis could be easily misdiagnosed." [3] Arthritis is now at epidemic levels in the U.S. Fluoride's plausible contribution has been ignored, but needs to be taken seriously.

3) Since fluoridation began in 1945 our exposure to other sources of fluoride has increased substantially. These include processing food and beverages with fluoridated water; air pollution from fluoride emitting industries; pesticide residues; vitamins; and dental products. If 1 ppm in drinking water were the only source of fluoride, the average person would ingest 2 milligrams (mg) of fluoride each day, though some may get less because they use bottled water, or they drink less water than the average adult. In 1991, the federal Department of Health and Human Services (DHHS) estimated that the range of exposure in communities with approximately 1 ppm fluoride in the water was 1.58 to 6.6 mg per day.[10]

4) The dose of 1.58 to 6.6 mg per day overlaps the dose found to depress the functioning of the human thyroid gland. At 2.27 to 4.54 mg/day, fluoride has been found to "completely relieve" the symptoms of hyperthyroidism (overactive thyroid).[11] With fluoride's known capacity to depress thyroid activity, it seems that there may be a link between current fluoride consumption and the prevalence of hypothyroidism (underactive thyroid). More than twenty million people in the U.S. receive treatment for thyroid problems and many others are thought to go undiagnosed.[12]

5) Fluoride is a hormone disrupter. It mimics the action of many water-soluble hormones by interacting with G proteins, which transmit hormonal messages across cell membranes.[13] Additionally, fluoride accumulates in the pineal gland and may reduce melatonin production.[14]

6) Fluoride (50-75 mg per day) given to osteoporosis patients to strengthen bones has actually increased their rate of hip fractures.[15,16] Of 18 studies conducted since 1990, 10 have found an association between water fluoridation and hip fractures in the elderly.[17] According to the Agency for Toxic Substances and Disease Registry (ATSDR): "If this effect is confirmed, it would mean that hip fracture in the elderly replaces dental fluorosis in children as the most sensitive endpoint of fluoride exposure." [18] Hip fracture is not a minor problem: in the U.S. up to 50,000 people die each year of osteoporosis-related hip fractures.[19]

7) Some evidence suggests that fluoride causes bone cancer in male rats and perhaps in young men.[20, 21]

8) A recent report by the Greater Boston Physicians for Social Responsibility reviews studies showing that fluoride interferes with brain function in young animals and in children, reducing IQ.[22]

Most European countries have rejected fluoridation. Recognizing that there are simple and effective alternatives, they have applied the precautionary principle. Their children's teeth have not suffered as a consequence. Parents willing to expose their children to fluoride can simply purchase fluoridated toothpaste (which contains 1000 to 1500 ppm fluoride -- read the warning label on the package).[23] The American policy of giving fluoride to children by medicating whole communities with a potent drug that may harm some people seems a dubious practice at best. At worst it violates the primary principle of medical ethics: First do no harm. Furthermore, it violates the ethical principle of informed consent.

In May 2000 the Fluoride Action Network (FAN) was formed by a coalition of activists and scientists from 12 countries (see: <http://www.fluoridealert.org>). FAN's goal is to end fluoridation and

minimize exposure to fluoride. FAN's founding members include the late David Brower; Teddy Goldsmith; Michael Colby; Gar Smith; Terri Swearingen; the union representing professional employees at EPA headquarters; and Dr. Hardy Limeback, Canada's leading dental authority on fluoridation who in 1999 apologized for having promoted fluoridation for 15 years.

We urge our colleagues working on public health and environmental issues to become involved and take a second look at fluoridation.

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* Paul Connett is professor of chemistry at St. Lawrence University in Canton N.Y.; Ellen Connett is editor of WASTE NOT , 82 Judson, Canton N.Y. 13617; Michael Connett is FAN's webmaster <<http://www.fluoridealert.org>>

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