

Fluoride: The Chemical

Fact Sheet • July 2009

Fluoride is a chemical compound that is often found in drinking water and has been the source of great controversy. Fluoride leaches into drinking water from natural soil erosion and from man-made sources such as discharge from fertilizer and aluminum factories.¹ In addition, almost 70 percent of the people in the United States on community water systems drink water with fluoride added.^{2,3} The practice of water fluoridation began more than 50 years ago when studies indicated that low levels of fluoride in drinking water could prevent tooth decay.⁴ Water systems typically make the decision to fluoridate drinking water at the local level, although in some instances it is determined by the state. The federal government does not mandate it.⁵

Most municipalities fluoridate their water at 0.7 to 1.2 parts per million, the “optimal level” set by the U.S. Public Health Service more than 40 years ago.⁶ However, in some areas, the amount of fluoride in drinking water can exceed this level because of its high naturally occurring concentration or agricultural runoff. In addition, people are exposed to fluoride in household dental products and food.⁷ Bottled water can also contain fluoride.⁸

While some research supports the claim that water fluoridation prevents dental cavities, the health risks of excessive fluoride exposure are also well established.

Fluoride: The Controversy

When municipalities first began using fluoride, many citizens resisted what they viewed as an attempt to medicate the population through drinking water. They were concerned about the introduction of a chemical toxin into the drinking water supply.

Despite initial protests, the scientific and medical community has overwhelmingly touted the success of fluoridation in decreasing tooth decay.⁹ Today, however, not everyone is convinced that fluoridation is a good idea. There is evidence that fluoride exposure at high concentrations is associated with discoloration of the teeth (enamel fluorosis), and under certain conditions can weaken bone and increase risks of fractures.¹⁰

The Fluoride Action Network, an international coalition of consumer groups, believes that the health risks of fluo-



ridation outweigh any benefits.¹¹ This group cites peer-reviewed studies indicating no direct link between fluoridation and improved dental health, arguing instead that overall dental health improvement was a result of better general dental care and education. The group also asserts that fluoridation of drinking water is unnecessary because fluoride works mainly when applied directly to teeth, not when swallowed.¹² They also point to evidence of an association between fluoride and bone cancers among males.¹³

Bottled Water Is Not the Answer

Many people concerned about fluoride in drinking water mistakenly believe that drinking bottled water is the way to avoid exposure to this chemical. However, fluoride can

be present in bottled water too. A 2008 study by the Environmental Working Group found that 50 percent of the brands of bottled water tested contained fluoride. This is not surprising, given that up to 40 percent of bottled water is municipal tap water, most of which is fluoridated. Fluoride can also get into bottled water from natural soil erosion,¹⁴ or from being added intentionally. If fluoride is added, bottlers must disclose that the water contains fluoride, but do not have to report the concentration of fluoride on the label.¹⁵ By comparison, municipal water systems report the results of fluoride tests in drinking water on water quality reports. Consumers concerned about fluoride should not be deceived into spending far more money on bottled water when they will actually know less about its fluoride content.

Increased Regulation of Fluoride

Although fluoride should not be added to drinking water because of documented health concerns, at the very least increased regulation is needed for this chemical. Emerging research indicates that the U.S. Environmental Protection Agency legal limit for fluoride (set at 4 parts per million) may not be adequately protecting public health. A 2006 report from the National Academy of Sciences found that the enforceable fluoride level does not protect children and infants against health effects.¹⁶ The World Health Organization recommends a more protective legal limit for fluoride (1.5 ppm).¹⁷

Filtering Fluoride

Most common and inexpensive water filters such as the pitcher and faucet-mounted style carbon filters do not remove fluoride. The only technologies certified by the National Sanitation Foundation to reduce fluoride are reverse osmosis and distillation.¹⁸ See Food & Water Watch's "Take Back the Tap Guide to Home Water Filtration" for more information.

What You Can Do

Decisions about whether to add fluoride to a community's drinking water are made at the state and local level. Contact your town council, state legislature or state water regulatory agency if you are concerned about your local fluoride policy and how it can be changed.

If you use a private well for drinking water, you may want to have it checked for fluoride levels at a certified laboratory as part of your annual water quality testing. Check out Food & Water Watch's "Take Back the Tap Guide to Private Well Testing and Filtration" for more information about testing your private well.

Do not buy into the myth that bottled water is fluoride free. Tap water is tested far more frequently than bottled water and municipal water providers are required to report test results to the public, unlike bottling water companies. Visit our website to find out more about how to get involved in our Take Back the Tap campaign.



Endnotes

- 1 "National Primary Drinking Water Regulations." U.S. Environmental Protection Agency.
- 2 "Fluoride in Drinking Water: A Scientific Review of EPA's Standards." The National Academies, March 2006.
- 3 Water Fluoridation Statistics for 2006. U.S. Centers for Disease Control, 2006.
- 4 Fawell, K et al. "Fluoride in Drinking-water." World Health Organization. 2006.
- 5 "Ground Water & Drinking Water: Drinking Water Contaminants." U.S. Environmental Protection Agency.
- 6 "Fluoride in Drinking Water: A Scientific Review of EPA's Standards." The National Academies, March 2006.
- 7 "Fluorides, Hydrogen Fluoride, and Fluorine: Public Health Statement." Agency for Toxic Substances and Disease Registry, Center for Disease Control and Prevention, Sept. 2003.
- 8 Bottled Water Quality Investigation: 10 Major Brands, 38 Pollutants: Test Results: Chemicals in Bottled Water." Environmental Working Group, Oct. 2008.
- 9 "Achievements in Public Health, 1900-1999: Fluoridation of Drinking Water to Prevent Dental Caries." Centers for Disease Control and Prevention, October 22, 2008
- 10 "Fluoride in Drinking Water: A Scientific Review of EPA's Standards." The National Academies, March 2006.
- 11 Fluoride Action Network website.
- 12 Pizzo, Giuseppe et al. "Community water fluoridation and caries prevention: a critical review." *Clinical Oral Investigations*, vol. 11, 2007 at 189-193.
- 13 Bassin, Elise B., David Wypij, Roger B. Davi. "Age-specific fluoride exposure in drinking water and osteosarcoma (United States)." *Cancer Causes Control*. Vol. 17, 2006 at 421-428.
- 14 "Bottled Water Quality Investigation: 10 Major Brands, 38 Pollutants: Test Results: Chemicals in Bottled Water." Environmental Working Group, Oct. 2008.
- 15 "Fact Sheet on Questions about Bottled Water and Fluoride." U.S. Centers for Disease Control. October 2008.
- 16 "CDC Statement on the 2006 National Research Council (NRC) Report on Fluoride in Drinking Water." Centers for Disease Control and Prevention, Aug. 9, 2007.
- 17 Fawell, K et al. "Fluoride in Drinking-water." World Health Organization. 2006.
- 18 NSF Consumer Information: Contaminant Guide: Fluoride. National Sanitation Foundation.

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