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Fluoride in Drinking Water: Why Is It Added and Is It Safe?

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Newswise — Fluoride is a naturally occurring mineral in water and many foods. In addition, fluoride is intentionally added to the public water supplies, because it has been demonstrated that communities with fluoride added to their water supplies have significantly reduced incidence of tooth decay in children. Fluoride makes teeth more resistant to the acid formed by bacteria in the mouth by preventing these acids from removing essential minerals from the tooth surface. Fluoride also helps to repair damaged tooth enamel.

What is dental fluorosis?

Dental fluorosis is a change in the appearance of the tooth's enamel attributed to exposure to too much fluoride. According to the US Centers for Disease Control (CDC), over 90% of fluorosis observed in the United States is mild to very mild in severity and is observed as white spots or streaks on the tooth surface. Dental fluorosis can occur when children regularly consume higher-than-recommended amounts of fluoride during the teeth-forming years (age 8 and younger). Individuals on private well water supplies that contain excessive amounts of fluoride may develop moderate to severe forms of dental fluorosis, including more extensive enamel changes. In very unusual instances, pits may form in the teeth. Severe cases of dental fluorosis rarely occur in communities where the level of fluoride in water is less than 2 milligrams per liter.

How can I ensure that my child is getting enough fluoride to prevent cavities while avoiding dental fluorosis?

According to the US CDC, if your community water supply is optimally fluoridating at 0.7 to 1.2 milligrams per liter and you are following recommended guidelines with respect to your child's tooth brushing habits, it is highly unlikely that your child is being exposed to too much fluoride. The CDC recommends that children under the age of six who are using fluoride toothpaste should use a small, pea-sized amount on the brush, spit out the excess paste, and rinse well after brushing. It is recommended that use of fluoride-containing toothpaste begin when your child is two years old. Fluoride-containing toothpaste should only be used with children under the age of two if recommended by your child's doctor or dentist. The correct use of fluoride treatments and fluoride-containing toothpaste can be discussed with your child's dentist. In addition, the CDC's website offers

guidance on how young children can use fluoride-containing products to prevent dental fluorosis. See Brush Up on Healthy Teeth.

The US Department of Health and Human Services recently made the recommendation that the optimal range of water fluoridation of 0.7 to 1.2 ppm (parts per million) be changed to an optimal dose of 0.7 ppm due to observations of increasing amounts of fluoride in food that is processed with fluoridated drinking water. This recommendation is still being finalized, but some US states have adopted this optimal dose for fluoridation of community water supplies. You can check with your local water supplier to see how much fluoride is in your drinking water. Consumers served by private wells may choose to have their water tested by a state certified laboratory. You can find a laboratory by contacting your state water certification officer.

Are the chemicals used for water fluoridation safe, I heard they are made from fertilizer?

Phosphate containing rocks and minerals are reacted with sulfuric acid to produce phosphate which is used in a wide variety of products from soft drinks and other foods, to cleaning products and, yes, even fertilizer. Hydrofluosilicic acid is a by-product of this phosphate manufacturing process. It can be used for fluoridation of drinking water or may be further processed to form solid sodium fluoride or sodium fluorosilicate. All three of these chemicals can be used for treatment of drinking water. However, drinking water treatment chemicals are required by most US states and Canadian provinces to be tested and certified to NSF/ANSI Standard 60: Drinking Water Treatment Chemical – Health Effects. This standard establishes criteria for the evaluation of treatment chemicals to ensure that they, and any potential contaminants, do not cause adverse health effects when they are dosed into drinking water at the manufacturer's stated maximum use level. More information about this standard and the testing and certification process can be found on the NSF website at: http://www.nsf.org/business/water_distribution/pdf/NSF_Fact_Sheet.pdf

For more information on this topic, along with references for additional information,please check out the website www.KidsChemicalSafety.org. Kids + Chemical Safety is administered by Toxicology Excellence for Risk Assessment (TERA), a non-profit and tax-exempt organization that conducts scientific research and development on risk issues in a transparent and collaborative fashion. TERA's mission is to support the protection of public health by developing, reviewing and communicating risk assessment values and analyses; improving risk methods through research; and, educating risk assessors, managers, and the public on risk assessment issues.