

Frequently Asked Questions

About Community Water Fluoridation

Overview

1-What is fluoride?

Fluoride is a naturally occurring mineral that protects teeth from tooth decay.

2-Why is fluoride added to water and toothpaste?

Fluoride in the mouth (in the saliva and dental plaque) is an effective way to prevent tooth decay. Fluoride's action in preventing tooth decay benefits both children and adults throughout their lives. The health benefits of fluoride are:

- Fewer cavities and less severe cavities.
- Less need for fillings and tooth extractions.
- Less pain and suffering associated with tooth decay.

3-How does fluoride work to prevent tooth decay?

Fluoride works by stopping or even reversing the tooth decay process—it keeps tooth enamel strong and solid. Tooth decay is caused by certain bacteria in the mouth. When a person eats sugar and other refined carbohydrates, these bacteria produce acid that removes minerals from the surface of the tooth. Fluoride helps to remineralize tooth surfaces and prevents cavities from forming.

4-What is community water fluoridation?

Almost all water contains some naturally-occurring fluoride, but usually at levels too low to prevent tooth decay. Many communities adjust the fluoride concentration in the water supply to a level known to reduce tooth decay and promote good oral health (often called the optimal level). This practice is known as community water fluoridation, and reaches all people who drink that water. Given the dramatic decline in tooth decay during the past 70 years since community water fluoridation was initiated, the Centers for Disease Control and Prevention (CDC) named fluoridation of drinking water to

prevent dental caries (tooth decay) as one of 10 great achievements in public health during the 20th Century.

5-Why did the Department of Health and Human Services (HHS) make a new recommendation for community water fluoridation?

Sources of fluoride have increased since the early 1960s. At that time, nearly all fluoride intake came from drinking water and from food and from beverages prepared with fluoridated water. Today, water is one of several sources of fluoride. Other sources include dental products such as toothpaste and mouth rinses, prescription fluoride supplements, and professionally applied fluoride products such as varnish and gels. Because it is now possible to receive enough fluoride with slightly lower amounts of fluoride in water, HHS developed a new recommendation for the level of fluoride that is to be used in community water fluoridation.

6-Why does HHS recommend 0.7 milligrams per liter?

An optimal level of fluoride in drinking water provides enough fluoride to prevent tooth decay in children and adults while limiting the risk of dental fluorosis, which is the only unwanted health effect of community water fluoridation. Dental fluorosis is a change in the appearance of the dental enamel that occurs in children whose teeth are forming under the gums. The risk of dental fluorosis increases as children ingest higher levels of fluoride. The most common impact of fluorosis is faint white spots on teeth that usually only a dental professional would notice. National survey data show that prevention of tooth decay can be maintained at the recommended level of 0.7 milligrams of fluoride per liter of drinking water. This recommended level updates and replaces the previously recommended range of 0.7 to 1.2 milligrams per liter.

7-What is dental fluorosis?

Dental fluorosis is a condition that causes changes in the appearance of tooth enamel. It may result when children regularly consume fluoride during the teeth-forming years, age 8 and younger.

Most dental fluorosis in the U.S.—about 92 percent—is very mild to mild, appearing as white spots on the tooth surface that may not be noticeable. Moderate and severe forms of dental fluorosis, which are less common, cause more extensive enamel changes. In the rare, severe form, pits may form in the teeth. The severe form hardly ever occurs in communities where the level of fluoride in water is less than 2 milligrams per liter.

8-How was the updated recommendation developed?

In September 2010, the Department of Health and Human Services convened a panel of scientists from across the U.S. government to review new information related to fluoride intake and to consider a new recommendation for community water fluoridation.

The federal panel reviewed the best available information, including changes in the occurrence and severity of tooth decay and of dental fluorosis in U.S. children and adults. The panel also studied the U.S. Environmental Protection Agency's (EPA) scientific assessments of the major sources of fluoride intake and risk of severe dental fluorosis among children. Severe dental fluorosis is rare in the United States.

Based on this review, the federal panel proposed changing the recommended level for community water systems to 0.7 milligrams per liter (the low end of the prior recommended range of 0.7 to 1.2 milligrams per liter). The proposed change was published in the *Federal Register*. Public comment on the proposed new level was sought—and considered carefully by the Panel—before finalizing the new recommendation. In addition, the proposed recommendation was submitted to a Peer Review Process, a step required by the federal government for influential scientific information.

9-Did HHS take into account the public comments that were received?

All comments were considered carefully. The panel of federal scientists addressed the major concerns by again reviewing the best available scientific information. The final Public Health Service Recommendation provides a written summary of public comments and the federal panel's response. The federal panel based their responses primarily on conclusions of evidence-based reviews and other panels of experts from different health and scientific fields.

Fluoride in drinking water and toothpaste more generally

10-How does fluoride get into tap water?

Fluoride is a mineral that occurs naturally and is released from rocks into the soil, water, and air. Almost all water contains some fluoride, but usually not enough to prevent tooth decay.

Fluoride can also be added to drinking water supplies as a public health measure for reducing cavities. Decisions about adding fluoride to drinking water are made at the state or local level.

11-Does my public water system add fluoride to the water?

The best way to find the fluoride level of your local public water system is to contact your water utility provider. Consumers can find the name and contact information of the water utility on the water bill. The U.S. Environmental Protection Agency requires that all community water systems provide each customer with an annual report on water quality, including the fluoride content.

If you live in one of the 39 states that participate in CDC's "My Water's Fluoride" program, you can find information on the fluoridation status of your water system online at <http://apps.nccd.cdc.gov/MWF/Index.asp>.

12-Why is the drinking water standard from the Environmental Protection Agency (EPA)—referred to as the MCL or MCLG—different than the optimal fluoride level recommended for community water systems by the Public Health Service (PHS)?

EPA's drinking water standard differs from the Public Health Service (PHS) recommendation for fluoridation because the two have different purposes.

EPA's enforceable standard for fluoride in public water supplies (4.0 milligrams per liter) is set to protect against exposure to high levels of naturally occurring fluoride. The PHS recommendation (0.7 milligrams per liter) identifies the optimal concentration of fluoride to prevent tooth decay while limiting the chance for dental fluorosis, which is a change in the appearance of the tooth enamel.

The PHS recommendation only applies to those public water systems that add fluoride to reach the optimal concentration. Public water systems that contain naturally occurring fluoride at concentrations above 0.7 mg/L will not be affected by the new recommendation.

13-In addition to drinking fluoridated "tap" water, how else may children ingest fluoride?

Young children often have trouble controlling their swallowing reflex and swallow toothpaste while toothbrushing. Commercial foods and beverages made with fluoridated water are an additional source of fluoride intake. Other fluoride-containing dental products, such as gels, varnishes, pastes, and dietary supplements are applied or prescribed by a health care professional. Most of these products are used only occasionally on the outside of the tooth and do not contribute much to a child's total intake of fluoride. Dietary fluoride supplements do contribute to the total amount of fluoride taken in.

14-Given that we get fluoride from other sources, should communities still fluoridate water to prevent tooth decay?

Yes. Consuming fluoridated water and other beverages and foods prepared or processed with fluoridated water is still important for prevention of decay in a community. Ingesting fluoridated water throughout the day maintains a low level of fluoride in saliva and plaque that enhances the remineralization of weakened tooth surfaces. Community water fluoridation has been identified as the most cost-effective method of delivering fluoride to all members of the community regardless of age, educational attainment, income level, and the availability of dental care. In studies conducted after other fluoride products, such as toothpaste, were widely available, scientists found additional reductions in tooth decay – up to 25 percent – among people with community water fluoridation as compared to those without fluoridation.

Potential adverse health effects

15-Are there any harmful health effects due to community water fluoridation?

The safety and effectiveness of community water fluoridation continues to be supported by scientific evidence produced by independent scientists and summarized by panels of experts. The independent, non-governmental Community Preventive Services Task Force has noted that the research evidence does not demonstrate that community water fluoridation results in any unwanted health effects other than dental fluorosis, a condition that causes primarily cosmetic changes in the appearance of tooth enamel.

16-Has the safety of community water fluoridation been evaluated?

The safety and effectiveness of fluoride at levels used in community water fluoridation have been thoroughly reviewed by multinational scientific and public health organizations (U.S., Canada, Australia, New Zealand, Great Britain, and by the World Health Organization) using evidence-based reviews and expert panels. These panels include scientists with expertise in various health and scientific disciplines, including medicine, biophysics, chemistry, toxicological pathology, oral health, and epidemiology.

Experts have weighed the findings and quality of available evidence and concluded that there is no association between water fluoridation and any unwanted health effects other than dental fluorosis.

17-Are children or adults exposed to too much fluoride?

Since the 1962 Public Health Service recommendations were developed, there has been greater availability of fluoride products (fluoride toothpaste, mouth rinses, fluoride supplements, etc.), as well as an expansion in the number of persons in the U.S. receiving fluoridated tap water. Increased exposure to fluoride increases the risk of dental fluorosis in children, a condition that caused primarily cosmetic changes in the appearance of the enamel. The prevalence of dental fluorosis among 12- to 15-year-olds appears to have increased –between 1986–1987 and 1999–2004, although the vast majority of cases were very mild or mild. Both the 1962 Public Health Service recommendation and the current updated recommendation for fluoride concentration in community drinking water were set to achieve a reduction in dental caries (tooth decay) while minimizing the risk of dental fluorosis. Implementation of the new recommendation is expected to lead to a reduction of approximately 25% (range: 12% to 42%) in fluoride intake from drinking water alone and a reduction of approximately 14% (range: 5% to 29%) in total fluoride intake.

18-Is my child getting the right amount of fluoride to prevent tooth decay from drinking water and tooth brushing?

If your child is among the more than 200 million Americans who receive their water from a community water system fluoridated at the optimal level *and* if you follow instructions for your child's toothbrushing, your child is receiving the right amount of fluoride to prevent tooth decay.

CDC recommends that children under 6 use a small, pea-sized amount of toothpaste, spit out the excess paste, and rinse well after brushing. Children should start using toothpaste with fluoride when they are 2 years old. Younger children should only use toothpaste with fluoride if your child's dentist or doctor recommends it.

Other questions about fluoride

19-If I am drinking water with fluoride, why do I also need to brush with toothpaste that contains fluoride?

Both drinking water and toothpaste with fluoride provide important and complementary benefits. Fluoridated water keeps a low level of fluoride in saliva and dental plaque all day. The much higher concentration of fluoride in toothpaste offers additional benefit. Fluoride slows the activity of bacteria

that cause decay and combines with enamel on the tooth surface to make it stronger and better able to resist decay. Together, the two sources offer more protection than using either one alone.

20-Is it safe to mix fluoridated tap water with commercial infant formula?

All formulas, whether concentrates or ready-to-feed, have low levels of fluoride. A study by the American Dental Association (ADA) confirmed that fluoride concentrations in commercially available infant formulas are very low.

In infant formula mixed from concentrate, whether liquid or powdered, the majority of fluoride comes from the water used. For this reason, some parents may choose to use low fluoride water to mix with the formula some of the time.

21-How do I know if fluoride is present in over-the-counter dental products?

In addition to toothpastes, other dental products such as mouth washes may contain fluoride. If so, they are regulated as drugs by the FDA and will be clearly labeled as to ingredients, directions for use, and warnings, if any. Fluoride-containing products are safe and effective when used as directed, but young children (under age 6) should not use fluoride mouth rinse, unless directed to do so by a dentist or doctor. Similarly, very young children (less than 2 years old) should only use toothpaste with fluoride if the child's dentist or doctor recommends it.

22-Does bottled water contain fluoride?

Bottled water products labeled as de-ionized, purified, or distilled have been treated so they contain no more than trace amounts of fluoride—unless they specifically list fluoride as an added ingredient. Other bottled water products, such as spring water, can contain fluoride that is added or naturally present in the original source of the water. The U.S. Food and Drug Administration (FDA) sets limits for the allowable range of fluoride in bottled water based on several factors, including the source of the water. To learn more, check out the CDC's fact sheet on Bottled Water and Fluoride

http://www.cdc.gov/fluoridation/faqs/bottled_water.htm and FDA's Website:

<http://www.fda.gov/ForConsumers/ConsumerUpdates/ucm203620.htm>.

23-Will using a home water filtration system remove the fluoride from my home's water?

Removal of fluoride from water is a difficult water treatment action. Most point-of-use treatment systems for homes that are installed on single faucets use activated carbon filtration, which will not remove the fluoride ion. Other treatment systems (such as reverse osmosis, ion exchange, or distillation systems to reduce fluoride levels) vary in their effectiveness to reduce fluoride. Check with the manufacturer of the individual product.

For Parents

Children younger than 6 years often cannot control their swallowing reflex and tend to swallow much of the toothpaste on their brush. Toothpaste that is swallowed (but not toothpaste that is spit out) contributes to a child's total fluoride intake. Therefore:

As soon as the first tooth appears, begin cleaning by brushing without toothpaste with a small, soft-bristled toothbrush and plain water after each feeding. Begin using toothpaste with fluoride when the child is 2 years old. Only use toothpaste with fluoride earlier if your child's dentist or doctor recommends it.

- Brush your child's teeth two times a day with fluoride toothpaste.
- Apply a pea-sized amount of toothpaste to the toothbrush.
- Supervise your child's brushing, encouraging the child to spit out toothpaste rather than swallow it. Additional information is available online:
<http://www.cdc.gov/oralhealth/publications/factsheets/brushup.htm>.
- If your child's dentist or doctor prescribes a fluoride supplement (or vitamin supplement that contains fluoride), ask him or her about any risk factors your child has for decay and the potential for dental fluorosis. If you live in an area with fluoridated water, fluoride supplements are not recommended.
- Children under age 6 should not use fluoride mouth rinses unless directed by a dentist or doctor.
- You can use fluoridated water for preparing infant formula. However, if your baby is exclusively consuming infant formula reconstituted with fluoridated water, there may be an increased potential for mild dental fluorosis. To lessen this chance, parents can use low-fluoride bottled water some of the time to mix infant formula; these bottles are labeled as de-ionized, purified, demineralized, or distilled and without any fluoride added after purification treatment. If fluoride has been added after purification, the product will be labeled accordingly. Additional information can be found in a CDC fact sheet on infant formula:
http://www.cdc.gov/fluoridation/safety/infant_formula.htm.

For Health Professionals:

- Fluoride supplements can be prescribed for children at high risk for tooth decay, whose primary drinking water has a low fluoride concentration. For children under age 8, weigh the risk for decay without fluoride supplements, the decay prevention offered by supplements, and the potential for dental fluorosis.
- Counsel parents and caregivers on the use of fluoride toothpaste by young children, especially those younger than 2 years. Fluoride toothpaste is a cost-effective way to reduce the prevalence of tooth decay. However, because they often cannot control their swallowing reflex and may like the taste of the toothpaste, young children often swallow a large portion of the toothpaste put on their brush.
- The prescription dose of fluoride supplements should be consistent with the schedule established by the American Dental Association, the American Academy of Pediatric Dentistry, and the American Academy of Pediatrics.

