

Fluoride And Your Teeth

Fluoride's Importance To The Teeth

Enamel, the outer layer of the crown of a tooth, is made of closely packed mineral crystals. Every day, minerals are lost and gained from inside the enamel crystals in processes called demineralization and remineralization.

Demineralization occurs when the enamel crystals and the spaces in between them are dissolved by acids. These acids are formed by the combination of plaque bacteria and sugar in your mouth. This process is balanced by remineralization in which minerals such as fluoride, calcium and phosphate are deposited inside the enamel. Too much demineralization without enough remineralization to repair the enamel leads to [tooth decay](#).

Fluoride helps teeth in two ways. When children under the age of 6 ingest fluoride in small doses, it becomes incorporated in their developing permanent teeth and makes it harder for acids to cause demineralization. Fluoride also works directly on teeth in the mouths of children and adults by helping to speed remineralization and disrupt the production of acids by bacteria.

Fluoride Treatments

Fluoride in foods, fluoride supplements and fluoridated water are ingested, enter the bloodstream through the stomach, then are absorbed into the body. In children, the fluoride then becomes available to the teeth that are developing in the jaw.

Topical fluoride products are applied directly to the teeth. They include toothpaste, mouthwash or fluoride treatments. Topical fluoride treatments are in the mouth for only a short time but produce elevated fluoride levels in the mouth for several hours afterward. Fluoride found in the water and in food products also works this way because the water washes over the teeth and some fluoride remains in the saliva.

Fluoride treatments are given in a dental office and are applied as a gel, foam or varnish during a dental appointment. The fluoride used for these treatments is at much higher strength than mouthwashes or toothpastes. Fluoride supplements also are available by prescription, and usually are reserved for children who live in areas without community water fluoridation. Children who need supplements receive them from ages 6 months to 16 years.

Fluoride Supplements: Who Needs Them?

Children between the ages of 6 months and 16 years who are not drinking fluoridated water should take fluoride supplements. They are available as liquids for younger children and tablets for older children, and can be prescribed by either your pediatrician or dentist.

All children should use fluoridated toothpaste. If your children are younger than 6, be cautious about how they use fluoridated toothpaste, because young children are more likely to swallow it after brushing instead of spitting it out. Use only a pea-sized amount of toothpaste when they brush, and encourage them to spit out as much as possible. Avoid flavored toothpastes that might encourage swallowing.

If your child has a history of cavities or is at high risk for decay, he or she should use additional fluoride to promote remineralization. Fluoride mouth rinses are recommended for children over the age of 6 and are found in the mouthwash section of most stores. Prescription fluoride rinses and gels are available from your dental office to provide a higher level of fluoride when needed. Parents should carefully supervise their children when using any fluoride product and keep fluoride out of reach of young children.

Can Fluoride Cause Harm?

As with other compounds, fluoride is safe and effective when used properly, but it can be hazardous at high doses. All water-fluoridation systems are checked daily to maintain safe fluoride levels. Parents should supervise the use of all fluoride products in the home.

Fluoride-supplement tablets should be stored safely away from young children. These supplements are taken each day in small quantities, ranging from 0.25 to 1 milligram per day based on the child's age and amount of fluoride in the water. Dentists limit the amount of tablets they prescribe at one time because the toxic dose of fluoride for a 2-year-old child weighing 22 pounds is 320 milligrams. To avoid any chance of overdose, do not stock up on fluoride tablets. If you have any questions regarding fluoride risks, talk to your dentist or physician.

Toxic fluoride doses are based on weight, and a toxic dose of fluoride for an 8-year-old child weighing 45 pounds is 655 milligrams. In comparison, an 8-ounce glass of water fluoridated to 1 part per million contains 0.25 milligrams of fluoride. Since these fluoride products are used in such small amounts, it is very difficult to receive toxic doses when using fluoride products at home.

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