Fluoride Facts

On January 14, 2005, Palm Beach County Water Utilities added fluoride to the public water system. **This is great news!** The following information is provided to give you a better understanding of fluoride's role in oral health.

What is fluoride and how does it reduce tooth decay?

Fluoride is a naturally occurring element that is effective in preventing and reversing the early signs of tooth decay. There are several ways through which fluoride achieves its decay-preventive effects. It makes the tooth structure stronger, so teeth are more resistant to acid attacks. Acid is formed when the bacteria in plaque break down sugars and carbohydrates from the diet. Repeated acid attacks break down the tooth, which causes cavities. Fluoride also acts to repair, or remineralize, areas in which acid attacks have already begun. The remineralization effect of fluoride is important because it reverses the early decay process as well as creating a tooth surface that is more resistant to decay.

What is water fluoridation?

Fluoride is a mineral that occurs naturally in all water sources, even the oceans. Community water fluoridation, which has been around for over 50 years, is simply the process of adjusting the fluoride content of fluoride deficient water to the recommended level for optimal dental health. That recommended level is 0.7 –1.2 ppm (parts fluoride per million parts water).

Is water fluoridation effective in preventing tooth decay?

The effectiveness of water fluoridation has been documented in the scientific literature for well over 50 years. Data within the last half-century indicate reductions in dental decay of 55%-60% when domestic water supplies are fluoridated at an optimal level.

Is water fluoridation safe?

The overwhelming weight of scientific evidence indicates that fluoridation of community supplies is both safe and effective. For generations, millions of people have lived in areas where fluoride is found naturally in drinking water in concentrations as high or higher than those recommended to prevent tooth decay. For the past 50 years, detailed reports have been published on all aspects of fluoridation. The accumulated dental, medical and public health evidence concerning fluoridation has been reviewed and evaluated numerous times by academicians, committees of experts, special councils of government and most of the world's major national and international health organizations. The verdict of the scientific community is that water fluoridation, at the recommended levels provides major oral health benefits. The question of possible secondary health effects caused by fluorides consumed in optimal concentrations throughout life has been the object of thorough medical investigations which have failed to show any impairment of general health. More than 100 organizations in the U.S. and around the world involved with health issues including the American Dental Association (ADA), American Medical Association (AMA), The U.S. Public Health Service and the World Health Organization (WHO) have recognized the benefits and endorse the use of community water fluoridation. Visit the ADA website at http://www.ada.org/public/topics/fluoride/facts/compendium.asp for a more comprehensive listing of these organizations.

How much fluoride is too much?

Fluoride like any other nutrient is safe and effective when used appropriately. However, like many common substances essential to life and good health—salt, iron, vitamins And D, chlorine, oxygen and even water itself-fluoride can be toxic in excessive quantities. Fluoride in the much lower concentrations (0.7 to 1.2 parts per million) used in water fluoridation is not harmful or toxic.

Fluoride works by two distinct mechanisms—topical and systemic. Topical fluorides strengthen teeth already present in the mouth by becoming incorporated into the surface of the teeth, making them more decay resistant. Topical fluorides include toothpastes, mouthrinses and professionally applied foams and gels. These are meant to be expectorated (spit out), not swallowed. Essentially, the frequent use of topical fluorides is the most effective way to prevent and reverse early decay.

Systemic fluorides are those that are ingested into the body and incorporated into the forming tooth structure in children. In contrast to topical fluorides, systemic fluorides ingested regularly during the time when the teeth are

developing are deposited throughout the entire surface and provide longer-lasting protection than those applied topically. Systemic fluorides include water fluoridation, fluoride present in food and beverages, and dietary fluoride supplements in the form of tablets or drops. Based on extensive research, the United States Public Health Service established the optimum concentration for fluoride in the water in the United States in the range of 0.7 to 1.2 ppm. This range effectively reduces tooth decay while minimizing the occurrence of dental fluorosis.

What is dental fluorosis and is my child at risk?

Dental fluorosis, also known as enamel fluorosis, is a change in the appearance of teeth and is caused when higher than optimal amounts of fluoride are ingested in early childhood while tooth enamel is forming. It is caused by a disruption of enamel formation, which occurs during tooth development in early childhood. Enamel formation of permanent teeth, other than third molars (wisdom teeth), occurs from about the time of birth until approximately five years of age. After the tooth enamel is completely formed, dental fluorosis cannot develop even if excessive fluoride is ingested. Older children and adults are not at risk for dental fluorosis. Dental fluorosis only becomes apparent when the teeth erupt. Because dental fluorosis occurs while teeth are forming under the gums, teeth that have erupted are not at risk for dental fluorosis.

Very mild to mild fluorosis has no effect on tooth function and may make the tooth enamel more resistant to decay. This type of fluorosis is not readily apparent to the affected individual or casual observer and often requires a trained specialist to detect. In contrast, moderate and severe forms of fluorosis are generally characterized by cosmetically objectionable changes in tooth color and surface irregularities. Most investigators regard even the more advanced forms of dental fluorosis as a cosmetic effect rather than a functional adverse effect.

The risk of dental fluorosis can be greatly reduced by closely monitoring the proper use of fluoride products by young children. For children under the age of 3, that cannot adequately rinse and spit, use only toothpaste that **does not** contain fluoride (such as tooth and gum cleanser or training toothpaste). For pre-school children age 3-6 years old, that are able to rinse and spit, a pea-sized amount of toothpaste that contains fluoride may be used. Please supervise your child carefully.

You can visit the ADA website at http://www.ada.org/public/topics/fluoride/facts/safety.asp for more information on dental fluorosis.

What if my child drinks bottled water?

The majority of bottled waters on the market do not contain optimal levels (0.7-1.2 ppm) of fluoride. Individuals who drink bottled water as their primary source of water could be missing the decay preventing effects of optimally fluoridated water available from their community water supply. However, it is difficult to assess how bottled water consumption affects fluoride exposure. Several factors to be considered are how much bottled water is actually being consumed, whether bottled water is being used for drinking, in meal preparation, and for reconstituting soups, juices and other drinks, and whether another source of drinking water is accessed during the day such as an optimally fluoridated community water supply at daycare, school or other caretakers home. Because it is nearly impossible to accurately assess the total amount of systemic fluoride for any one person, dietary fluoride supplements are not recommended for children residing in optimally fluoridated areas.

Can home water treatment systems (e.g. water filters) affect optimally fluoridated water supplies?

Some types of home water treatment systems can reduce the fluoride levels in water supplies potentially decreasing the decay-preventive effects of optimally fluoridated water. There are many different types of water treatment systems and there has not been a large body of research regarding the extent to which these treatment systems affect fluoridated water. Available research is often conflicting and unclear. However, it has been consistently documented that reverse osmosis systems and distillation units remove significant amounts of fluoride, while water softeners do not cause significant changes in fluoride levels. Before fluoride supplements can be considered, consumers using home water treatment systems should have their water tested to establish the fluoride level of the treated water. Testing is available through local and state public health departments as well as private laboratories.

The following information was obtained from the ADA's Website at http://www.ada.org/public/topics/fluoride/ and compiled by Dr. Bender. Please visit this website to answer any additional questions you may have or call our office at (561) 433-5544.