What's the 411 on Fluoride?

Stories and articles concerning fluoridation of drinking water frequently appear in magazines, newspapers, health letters, and on the Internet. More often than not, the reports oppose fluoridation, citing various reports and studies. This attention often raises questions regarding the practice of adding fluoride to drinking water. The concerns we receive are mostly directed to three issues: benefits, safety/health risks and cost.

Benefits of Optimal Drinking Water Fluoridation

The Centers for Disease Control consider optimal fluoridation of drinking water to rank among the 10 top public health efforts of the 20th century. Maintaining an optimal fluoride concentration (set locally between 0.7 to 1.2 mg/L) has been documented to provide a 15% to 40% decrease in the incidence of dental caries (cavities) across all segments of the population. Because of these benefits, the Colorado Department of Public Health and Environment advocates optimal fluoridation. Other institutions and professional organizations that support this common practice include the World Health Organization (WHO), the National Kidney Foundation, the American Dental Association, the American Medical Association, the National Institutes of Health, and the Office of the Surgeon General

Safety and Health Risks

Fluoride has been added to public water supplies to reduce the incidence of tooth decay since 1945, and safety and health risks have been re-evaluated frequently since then. The conclusion of these evaluations is that there is insufficient evidence to support an association between optimal fluoridation and health conditions such as osteosarcoma, Down's syndrome, heart disease, osteoporosis and bone fracture, AIDs, low intelligence, Alzheimer disease, or allergic reactions.

Since fluoride concentrations of 4.0 mg/L and higher are known to cause long-term adverse health effects, fluoride is treated as a drinking water contaminant under the Safe Drinking Water Act. The Maximum Contaminant Level (MCL), recently reviewed by the Environmental Protection Agency, is set at 4.0 mg/L to protect public health from severe dental fluorosis, a condition in which the tooth enamel becomes pitted or mottled. The EPA also set a Secondary MCL of 2.0 mg/L fluoride to protect the public from the adverse cosmetic effects of mild dental fluorosis (white or brown streaks, especially near the cutting surface). Broomfield's target value of 1.0 mg/L for optimal dental health is well below both of these MCL's for dental fluorosis.

As with other drinking water contaminants, children often receive a proportionally higher dose because of their smaller size. Dental fluorosis is caused by exposure to higher levels of fluoride <u>before the teeth have broken through the gums</u>, typically from the ages of 3 months to 8 years old. The American Dental Association has recommended that for infants being fed primarily reconstituted infant formula, a fluoride-free water source such as demineralized or distilled water be used to reduce fluoride intake. For older children, a child's largest source of fluoride intake is from tap water and drinks prepared from tap water, followed by tooth pastes and mouth rinses.

Consumers should be aware that all drinking water, including bottled water, may reasonably be expected to contain at least small amounts of fluoride and other contaminants. Immuno-compromised people such as those undergoing chemotherapy, people who have had organ transplants, and people with immune system disorders

including HIV/AIDS should seek advice from their health care providers about possible restrictions on the source of their drinking water.

All materials used in the treatment and distribution of potable water, including all treatment chemicals, are subject to strict standards for purity established by the American Water Works Association (AWWA) and American National Standards Institute (ANSI). These standards require that "no soluble materials or organic substances in quantities capable of producing deleterious or injurious effects on the health of those consuming water that has been treated properly" be present.

Broomfield's Water Treatment Facility uses sodium fluorosilicate to fluoridate its drinking water. This chemical, like others used in drinking water treatment and distribution—for example, soda ash, lime, bleach, ammonia, alum – is manufactured from natural sources and dangerous in concentrated form, as are many common household products such as baking soda, baking powder and table salt. When the fluoride concentration is maintained at the optimal level, there are no associated health risks.

Broomfield's Fluoridation Program

Broomfield has been adding fluoride to its drinking water since 1968, when City Council authorized fluoridation in accordance with the recommendation of dentists and physicians in Broomfield and the optimum standards of the Colorado Department of Health. The target fluoride level in Broomfield's water is 1.0 mg/L, as set by the Colorado Community Water Fluoridation Program.

Broomfield tests the fluoride levels in its treated water at least once daily. The portion of Broomfield's water supplied by the Denver Water Department is fluoridated to nearly the same level. Each month, a water sample collected from an elementary school is sent to the CDPHE State Laboratory to confirm the results of our own monitoring program. The majority of resident contacts that city staff receives regarding fluoride are to confirm that Broomfield's drinking water contains optimal fluoride levels. Few residents have contacted us to object to fluoridation.

Costs

Fluoridation has one of the best cost/benefit ratios of any health protection measure. For treatment systems with more than 20,000 customers, fluoridation has been estimated to reduce dental treatment costs by $38 for each $1 spent. Overall, the cost of fluoridation is less than $1 per person per year. Broomfield's 2008 fluoridation costs were about 0.006 cents per 1,000 gallons, or about 28 cents per customer.

Fluoridation provides special benefits to the 40 percent of Colorado adults without dental insurance, and 150,000 Colorado children who do not have access to regular dental care.

For additional information about Broomfield's drinking water, call 303.464.5606.