AMERICAN FLUORIDATION SOCIETY

Fluoride is Fluoride

The argument is frequently put forth by fluoridation opponents that the fluoride added through water fluoridation is not the same as "naturally occurring fluoride". This is false. First of all, calcium fluoride is not fluoride. It is a compound containing the fluoride ion. Second, calcium fluoride does not exist in groundwater.

Fluoride is the anion of the naturally occurring element fluorine. An anion is a negatively charged atom. As ground water flows over rocks it picks up fluoride ions leached from the compound calcium fluoride, and fluorosilicate compounds in those rocks. These fluoride ions are to what is commonly referred as being "naturally occurring" fluoride.

The most commonly utilized substance to fluoridate water systems is hydrofluorosilic acid (HFA). Once introduced into drinking water, due to the pH of that water (~7), the HFA is immediately and completely hydrolyzed (dissociated). The products of this hydrolysis are fluoride ions identical to those "naturally occurring" fluoride ions which have always existed in water, and trace contaminants in barely detectable amounts far below EPA mandated maximum allowable levels of safety.

From the CDC:

Fluoride Additives Are Not Different From Natural Fluoride

Some consumers have questioned whether fluoride from natural groundwater sources, such as calcium fluoride, is better than fluorides added "artificially," such as FSA or sodium fluoride. Two recent scientific studies, listed below, demonstrate that the same fluoride ion is present in naturally occurring fluoride or in fluoride drinking water additives and that no intermediates or other products were observed at pH levels as low as 3.5. In addition, the metabolism of fluoride does not differ depending on the chemical compound used or whether the fluoride is present naturally or added to the water supply.

Finney WF, Wilson E, Callender A, Morris MD, Beck LW. Re-examination of hexafluorosilicate hydrolysis by fluoride NMR and pH measurement. Environ Sci Technol 2006; 40:8:2572.

G.M. Whitford, F.C. Sampaio, C.S. Pinto, A.G. Maria, V.E.S. Cardoso, M.A.R. Buzalaf. Pharmacokinetics of ingested fluoride: Lack of effect of chemical compound., Archives of Oral Biology, 53 (2008) 1037–1041.

http://www.cdc.gov/fluoridation/factsheets/engineering/wfadditives.htm

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