

Untested Type of Fluoride Used in the Overwhelming Majority of U.S. Water Supplies

By [Washington's Blog](#)

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Theme: [Environment](#), [Science and Medicine](#)

Dartmouth University [wrote](#) in 2001:

In a recent article in the journal *NeuroToxicology*, a research team led by Roger D. Masters, Dartmouth College Research Professor and Nelson A. Rockefeller Professor of Government Emeritus, reports evidence that public drinking water treated with sodium silicofluoride or fluosilicic acid, known as silicofluorides (SiFs), is linked to higher uptake of lead in children.

Sodium fluoride, first added to public drinking water in 1945, is now used in less than 10% of fluoridation systems nationwide, according to the Center for Disease Control's (CDC) 1992 Fluoridation Census. Instead, SiF's are now used to treat drinking water delivered to 140 million people. While sodium fluoride was tested on animals and approved for human consumption, the same cannot be said for SiFs.

Masters and his collaborator Myron J. Coplan, a consulting chemical engineer, formerly Vice President of Albany International Corporation, led the team that has now studied the blood lead levels in over 400,000 children in three different samples. In each case, they found a significant link between SiF-treated water and elevated blood lead levels.

"We should stop using silicofluorides in our public water supply until we know what they do," said Masters. Officials at the Environmental Protection Agency have told Masters and Coplan that the EPA has no information on health effects of chronic ingestion of SiF-treated water.

Also requiring further examination is German research that shows SiFs inhibit cholinesterase, an enzyme that plays an important role in regulating neurotransmitters.

"If SiFs are cholinesterase inhibitors, this means that SiFs have effects like the chemical agents linked to Gulf War Syndrome, chronic fatigue syndrome and other puzzling conditions that plague millions of Americans," said Masters. "We need a better understanding of how SiFs behave chemically and physiologically."

[Here is](#) Masters' scientific paper on SiFs (also called "fluosilicic acid" and "[fluorosilicic acid](#)").

Where does this compound come from?

The U.S. Department of Health and Human Services, National Toxicology Program, [reported](#) in 2001:

Sodium hexafluorosilicate is produced by treating fluorosilicic acid with sodium hydroxide, sodium carbonate, or sodium chloride; alkalinity is adjusted to avoid the release of the fluoride. Fluorosilicic acid is mainly produced as a byproduct of the manufacture of phosphate fertilizers where phosphate rock is treated with sulfuric acid.

The major use of sodium hexafluorosilicate and fluorosilicic acid is as fluoridation agents for drinking water.

According to the [U.S. Geological Survey](#):

An estimated 40,000 tons of fluorosilicic acid (equivalent to about 70,000 tons of 92% fluorspar) was recovered from phosphoric acid plants processing phosphate rock. Fluorosilicic acid was used primarily in water fluoridation, either directly or after processing into sodium silicofluoride.

The USGS also [noted](#) in a 2000 report:

Fluorosilicic acid is a byproduct of the phosphate fertilizer industry and is not manufactured for itself alone ...

In other words, even though neither the EPA or any other government agency has studied the effects of long-term ingestion of fluorosilicic acid, it is being used instead of sodium fluoride because it is cheaper.

As Edward Urbansky from the EPA's Office of Research and Development, National Risk management Research Laboratory, Water Supply and Water Resources Division [wrote](#) in 2002:

The most common fluoridating agents used by American waterworks are sodium fluoride (NaF), hexafluorosilicic acid (H₂SiF₆), and sodium hexafluorosilicate (Na₂SiF₆) as shown in Figure 1.14 Although 25% of the utilities reported using NaF, this corresponds to only 9.2% of the U.S. population drinking fluoride-supplemented tap water. ... The cost savings in using fluorosilicates result in large systems using those additives instead.

In the United States, the primary sources of fluoridating agents are rocky mineral deposits containing mixtures of fluorite and apatite; the fluoridating agent itself is produced as a byproduct of phosphate fertilizer manufacture.

The EPA is aware of papers positing links between fluoridation agents and lead in the bloodstream or challenging the accepted chemistry. To truly investigate such hypotheses, better chemical knowledge of the speciation is required.

And see [this](#).

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