

Fluorosilicates Increase Blood Lead Levels³

A growing body of research suggests that the practice of fluoridation may double the exposure of lead in our children from drinking water in two important ways:

1. **Direct additive:** Lead is the second most common contaminant found in the silicofluoride products used in most artificial water fluoridation facilities in the US.
2. **Indirect additive:** Lead is now known to leach from lead pipes, lead solder and leaded brass by mechanical and chemical interactions of fluorosilicates and/or chloramine.

Jar Study: Vukmanich 2009 Effects of F on Water Chemistry

http://www.newmediaexplorer.org/chris/Vukmanich_2009_Effects_Fluoridating_Agents_Water_Chemistry.pdf

Conclusion: "Addition of fluoridating agents to the water, especially hydrofluorosilicic acid would increase this tendency and hence increase lead levels at the consumer tap."

"Fluoridation impacts on Water Chemistry" from Thunder Bay, Ontario (BOH report, July 20, 2009) <http://www.hamilton.ca/NR/rdonlyres/3723E464-3CF3-4F8A-8C1F-A415544BD9E1/0/Jul09BOH08024.pdf>

"The effects on the water chemistry of three fluoridating agents, hydrofluorosilicic acid, sodium silicofluoride and sodium fluoride, were all tested on Bare Point drinking water in a laboratory controlled setting. The impact on the water chemistry with fluoride addition was tested to determine whether the addition of fluoride would have the potential to increase the number occurrences of elevated lead levels in the community.

The results of this preliminary study show that all fluoridating agents, when added to the drinking water at a concentration of 0.7ppm (the optimal fluoride concentration rate as recommended by an expert panel convened by Health Canada in 2007), increased lead leaching from the lead pipe."

Sawan RM, Leite GA, Saraiva MC, Barbosa F, Tanus-Santos JE, Gerlach RF. Fluoride increases lead concentrations in whole blood and in calcified tissues from lead-exposed rats. Toxicology. 2010 Apr 30;271(1-2):21-6.
<http://www.ncbi.nlm.nih.gov/pubmed/20188782>

"systemic exposure to fluoride should be minimized, since fluoride may increase lead accumulation, and any preventable exposure to lead should be avoided."

Masters RD, Coplan M. 1999 Water treatment with silcofluorides and lead toxicity. International Journal of Environmental Science 56: 435-449.

Masters RD, Coplan MJ, Hone BT, Dykes JF. 2000 Association of silcofluoride treated water with elevated blood lead. Neurotoxicology 21(6): 1091-1100.

Macek M, et al. (2006). Blood lead concentrations in children and method of water fluoridation in the United States, 1988-1994. Environmental Health Persepctives 114:130-134.

- studied 9477 individuals (1–16 years) and showed a statistical interaction between the water fluoridation method and BPb levels when the individuals lived in old houses (built before 1946 or of unknown age)

Maas RP, Patch SC, Christian AM, Coplan MJ 2007 Effects of fluoridation and disinfection agent combinations on lead leaching from leaded-brass parts. Neurotoxicology. Sep;28(5):1023-31. From Table 3 (p. 1029):

Median Lead level	
Chlorine	145.9µg/DL (1.5mg/L)
Chloramine *	23.3µg/DL (0.23mg/L) or 233ppb
Chlorine & sodium fluoride	185.3µg/DL (1.85mg/L)
Chloramine* & sodium fluoride	28.1µg/DL (0.28mg/L)
Chlorine and fluorosilicic acid	362.8µg/DL 3.63mg/L) doubled
Chloramine* & fluorosilicic aci	42.6µg/DL(0.43mg/L) doubled
Chloramine** & fluorosilicic acid	83.1µg/DL(0.83mg/L) quadrupled

*with 100% extra ammonia added, to neutralize effect; **note** difference of one sample of chloramine without this extra ammonia (at **) ** without extra ammonia.

Coplan MJ, Patch SC, Masters RD, Bachman MS. 2007 Confirmation of and explanations for elevated blood lead and other disorders in children exposed to water disinfection and fluoridation chemicals. Neurotoxicology. Sep;28(5):1032-42. Silcofluoride use is associated with 2 neurotoxic effects:

1. Elevated blood lead levels in children (PbB>10µg/dL) is about double that in non-fluoridated communities
2. Silcofluorides inhibit an enzyme called acetylcholinesterase (AchE).