

# What Are We Putting In Our Drinking Water?



# We Are Putting Hydrofluorosilicic Acid In Our Drinking Water.

**Unprocessed scrubbing solution** from the smoke stack emissions of the phosphate mining industry containing:

- ~ 23% Hydrofluorosilicic Acid [ $H_2SiF_6$ ] – an **environmental contaminant**
- ~ 77% water containing various recognized contaminants such as **arsenic, lead, mercury, etc.**

Other water fluoridation chemicals [e.g. sodium silicofluoride, sodium fluoride], are derived from hydrofluorosilicic acid. **They, too, contain contaminants lead, arsenic, mercury, etc.**

**Hydrofluorosilicic Acid**  
**does not occur in water “naturally”**



# Hydrofluorosilicic Acid Analysis

Alberta Report on February 17, 1992.

● <u>METAL</u>	<u>Amount (mg/L)</u>	<u>Amount (ppm)</u>
● Arsenic	57 mg/L	57 ppm
● Lead	3 mg/L	3 ppm
● Mercury	0.01 mg/L	0.01 ppm
● Chromium	0.1 mg/L	0.1 ppm

LCI LTD

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Jacksonville Beach, FL 32240-9000

**FOR REFERENCE ONLY – DO NOT SEND OUT**

October, 1990



**HYDROFLUOSILICIC ACID SPECIFICATIONS**

H<sub>2</sub>SiF<sub>6</sub>

COMMERCIAL GRADE

	<u>GUARANTEED</u>	<u>TYPICAL</u>
H <sub>2</sub> SiF <sub>6</sub> (MOL. WT. 144.06)	25% +/- 3% by weight	24%
Fluorine	19% +/- 3% by weight	18.5%
Heavy Metals, as lead, Pb.	0.020% MX.	0.0002%
Phosphorus		0.100%
HF		1.0%
Arsenic		0.0035%
Barium		< 0.0002%
Cadmium		0.0004%
Chromium		< 0.00003%
Iron		0.100%
Iodine		0.0015%
Lead		< 0.00005%
Mercury		< 0.0000001%
Selenium		< 0.000003%
Silver		0.0004%
Specific Gravity, at 25%, at 60°F		1.224
Boiling Point for 25%		222.5°F
Freezing Point for 25%		-4.0°F
Weight per Gallon for 25%		10.2 lbs/gal
pH 1% Solution		1.2

Material meets AWWA Standard B703 – 89

Water white to straw yellow in color – transparent aqueous Solution – acid liquid.

Clean and free of visible suspended matter.

Highly corrosive, pungent odor – store in structural carbon, Hastelloy C, Durimer 20 and approved rubber or plastic lined containers.

**FOR REFERENCE ONLY - DO NOT SEND OUT**

Telex 752638 LCI LTD JAX  
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# Do People Know?

**Within this document:**

**“FOR REFERENCE ONLY – DO NOT SEND OUT”**

- Is this an attempt to hide what is actually put into our drinking water?
- Does this help explain why the public, legislators and health officials supporting fluoridation policy are generally unaware the products used for water fluoridation are in fact toxic waste and contain contaminants like lead, arsenic and mercury?



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**CERTIFICATE OF ANALYSIS**  
**FLUOROSILICIC ACID**  
Results of Analysis of a Weighted Average Sample

CAR NO: SHPX204535  
Date: August 31, 2006

ANALYSIS	RESULT
NET H <sub>2</sub> SiF <sub>6</sub>	23.67 %
P <sub>2</sub> O <sub>5</sub>	0.13 %
FREE ACID*	0.34 %
DENSITY	1.216 g/ml
COLOR (APHA Std Method)	40
LEAD	< 1 ppm
ARSENIC	34.75 ppm
CHLORIDE	

WE CERTIFY THAT PRODUCT SHOWN WITH THIS CERTIFICATE OF ANALYSIS MEETS AWWA  
STANDARD D703-97 AND NSF/ANSI STANDARD 60 REQUIREMENTS

\* AWWA D-205-09



Kamal Sakyl-Arafat / QC Lab manager

NOTICE: A PORTION OF THE ABOVE MATERIALS IS RETAINED FOR FORTY-FIVE DAYS.



# Hydrofluorosilicic Acid Analysis – Region of Waterloo, Ontario

HFSA=23.67%  
Lead=<1mg/L (1 ppm)  
Arsenic = 34.75mg/L (34.75 ppm)

- Stamped as NSF certified yet NSF admits that they are violating their own Standard 60 requirements.
- Any product in violation of Standard 60 violates the Safe Drinking Water Act of Ontario and the Certificate of Approval given the municipality to fluoridate using such product.

## Mr. Stan Hazan, General Manager, Drinking Water Additives Certification Program, National Sanitation Foundation (Testimony 2004 Under Oath)

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Q: I guess under the terms of Standard 60 itself, does NSF have any specific duty or obligation with respect to consumers?

MR HAZAN: I would answer that by saying we have an obligation to every stakeholder, including consumers, that the testing and evaluation of products be done absolutely correctly and per the specific requirement of the standard.

Q: So would it be fair so that I -- that if Standard 60 was not followed with respect to a particular substance, that would be a breach of that allegation to the stakeholders, I think you referred to them?

MR HAZAN: Uh-huh. Yeah. **If we didn't follow specific requirement under the standard, then -- then that would be a breach.**

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MR HAZAN: Well, I believe that one of the -- it was either a deposition or a record that indicated that no -- that **NSF failed to follow its own Standard 60 procedures.**

# Safe & Effective?

- There are **NO safety studies** on hydrofluorosilicic acid.  
EPA, FDA, NSF letters 1999, 2000, 2001, 2002, 2004, NRC 2006, Health Canada 2007
- There are **NO efficacy studies** to demonstrate that hydrofluorosilicic acid is effective at reducing cavities, when swallowed, at the recommended doses.
- Any claims that these products are “**safe and effective**” are without merit.
- Safety and efficacy cannot be determined by rhetoric, opinion or endorsements.

## Does The Public Know?

Due to shortages in North America,  
fluorosilicates are now coming from China.

“Kip Duchon (CDC) reported in 2007 that when U.S. Agrichemicals withdrew from the market in 2005, about half of U.S. sodium silicofluoride supplies began to be imported from a producer in China.”

# US Environmental Protection Agency

- “In regard to the use of fluosilicic acid as a source of fluoride for fluoridation, this agency regards such use as an ideal environmental solution to a long-standing problem. By recovering by-product fluosilicic acid from fertilizer manufacturing, water and air pollution are minimized.”  
Rebecca Hamner 1983 US EPA

## American Water Works Association (AWWA)

- “Fluorosilicic acid is produced as a co-product in the manufacture of wet-process phosphoric acid and other phosphate fertilizers. The raw material, phosphate rock, contains fluoride and silica and is treated with sulfuric acid, which evolves the gases silicon tetrafluoride ( $\text{SiF}_4$ ) and hydrogen fluoride (HF). These gases are passed through scrubbers and react with water to form fluorosilicic acid.”

# Hydrofluorosilicic Acid

- “If this stuff gets out into the air, it’s a pollutant;  
if it gets into the river, it’s a pollutant;  
if it gets into the lake, it’s a pollutant;  
but if it goes right straight into your drinking water  
system, it’s not a pollutant.

That’s amazing!”

Dr. William Hirzy 2000 – USA Senior EPA chemist

# Hydrofluorosilicic Acid Classified

- Canadian Environmental Protection Act classifies it as “***persistent***”, “***bioaccumulative***” and “***toxic***”.
- Environment Canada classifies it as a “***hazardous substance***”.
- Transport Canada classifies it as a “***dangerous good***”.
- US Environmental Protection Agency classifies it as a “***class one hazardous waste***”.

## CEPA: Toxic Substances List - Updated Schedule 1 As Of December 27, 2006

Source: Canadian Environmental Protection Act

**Lead**  
**Mercury**  
**Inorganic Arsenic**  
**Inorganic Fluorides**

**All four are toxic substances under CEPA's definition:**

1. Persistent (cannot be destroyed)
2. Bioaccumulative (accumulates in animals and plants)
3. Toxic (dangerous immediate or long-term effects)
4. Anthropogenic (made/released by humans)

**Note:** HFSA, Sodium Silicofluoride, Sodium Fluoride, are all inorganic fluorides, not naturally occurring – very different!

# Relative Toxicity

Robert E. Gosselin et al, *Clinical Toxicology of Commercial Products* 5th ed., 1984

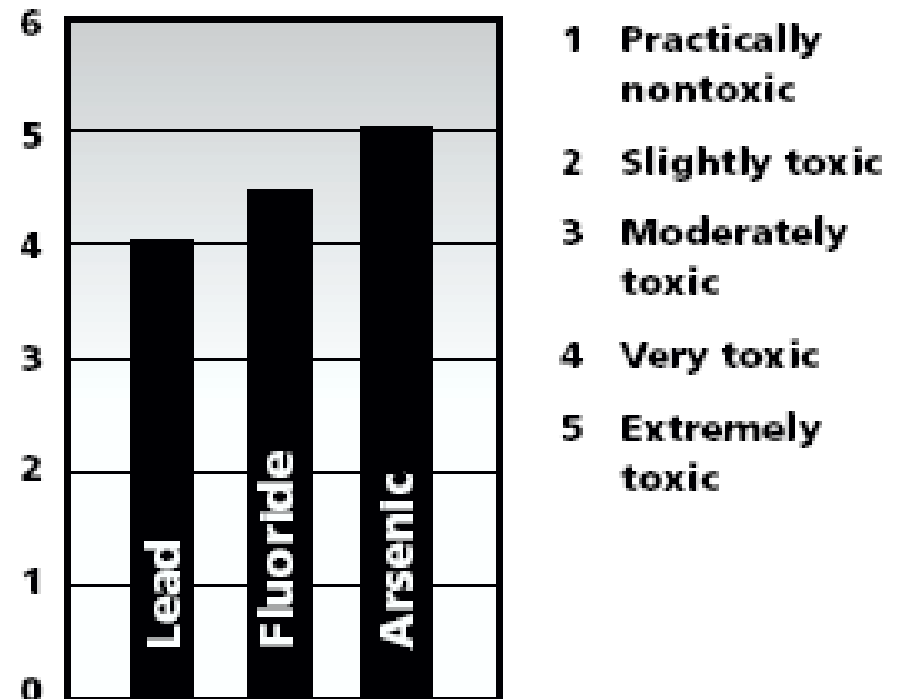
**LD50 – lethal dose at which 50% of test subjects die**

- **MAC of lead = 15ppb**
- **MAC of fluoride = 1,500 ppb**
- **MAC of arsenic = 10ppb**

Public policy affords tolerance to fluoride which seems unjustified

Permits fluoride to be used at 100 times higher doses than lead, even though they have similar toxicities.

*Relative Toxicity*



## Contaminants: Arsenic, Lead

- There is absolutely no legitimate government interest fulfilled by adding arsenic, lead, mercury and other contaminants to our drinking water.
- Many communities already have arsenic and lead levels exceeding safe limits.

## If We Are Concerned About Lead In Children's Toys...

**Fluorosilicates + Chloramine = 's Increased  
Lead Levels In Drinking Water And Us**

New studies show HFSA can increase lead  
exposure and uptake in children.

## Leaded Brass Fittings, Lead Pipes, Leaded Solder

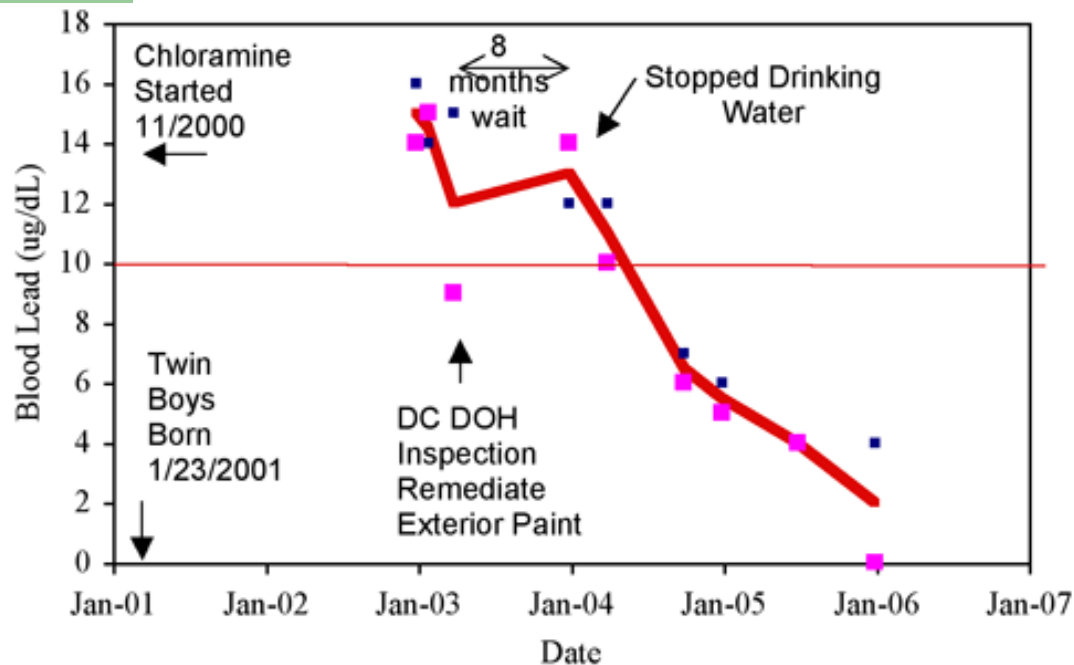
- Increased blood levels were found in homes without lead service lines or leaded solder copper piping. The only possible lead source had to be leaded brass plumbing and/or leaded brass faucets.

## Why?

- Hydrofluorosilicic Acid is a good solvent for lead.
- Chlorine, Ammonia, and Chloramine induce copper stress cracking and/or can dissolve it, releasing copper and copper containing leaded solder.
- Ammonia + Hydrofluorosilicic Acid = **Ammonium Fluorosilicate** - an established solvent for copper alloys.

# Fluorosilicates Increase Blood Lead Levels

## Blood lead data for twin boys born in 2000



- “After the levels were found to be higher than CDC’s [Centers for Disease Control] level of concern, DOH [department of health] inspected their home for lead paint and found only a remote exterior door as an admittedly unlikely source. However, painting the door failed to bring down the boys’ blood lead levels. But when they stopped drinking tap water and it was no longer used in cooking their meals, the boys’ blood lead levels declined rapidly.”

Renner R. 2006

## Maas et al. September 2007 NeuroToxicity

- Over the first test week with chlorine flushing, lead concentrations nearly doubled from 100 ppb to nearly 200 ppb.
- When fluorosilicic acid was added, lead concentrations spiked from 100 ppb to over 900 ppb. (9 times higher)
- Lead concentrations from the chlorine-based waters appeared to be **decreasing** over the study period.
- Lead concentrations seemed to be **increasing** with the chlorine + ammonia + fluorosilicic acid combination.

## Safe & Effective?

- There are **NO safety studies** on hydrofluorosilicic acid or sodium silicofluoride. [EPA, FDA, NSF letters 1999, 2000, 2001, 2002, 2004, NRC 2006]
- There are **NO efficacy studies** to demonstrate that hydrofluorosilic acid or sodium silicofluoride are effective at reducing cavities, when swallowed, at the recommended doses.
- No one can claim these products are **safe or effective**.

# Hydrofluorosilicic Acid, Arsenic, Lead, Etc.

- Addition of HFSA and its contaminants (arsenic, lead, mercury, etc.) is the only water treatment which **does not improving water quality**.
- HFSA is added to our water as a drug therapy, which is now demonstrated to be **ineffective in preventing cavities**.
- HFSA and its bundled contaminants **degrade the quality of our drinking water and our source water**.
- **HFSA does 'not' occur naturally in water and has 'not' been shown to mimic natural fluoride. It has never been tested as either safe or effective.**

# Conclusions

1. We are putting toxic waste into our drinking water.
2. In the absence of scientific research, no one should simply claim these products are safe & effective.
3. There is absolutely no legitimate government interest fulfilled by adding arsenic, lead and other contaminants, to our drinking water.
4. Hydrofluorosilicic Acid/Silicofluorides degrade drinking water and degrade source water.
5. Hydrofluorosilicic Acid/Silicofluorides increase blood lead levels.