

Artificial Water Fluoridation

Environmental Effects & Legal Implications

Kimberly DeYong
 Windsor's Fluoride Action Network

Heather Gingerich
 B.Sc. Biological Science (Guelph)
 M.Sc. Earth Science (Waterloo)
 International Medical Geology Association
 (Director, Canada)

What is Artificial Water Fluoridation?

- * Artificial water fluoridation is the addition of fluorosilicates to drinking water. Unlike all other additives that eliminate water-borne pathogens, only fluoride is intended as a medical treatment, presumably to prevent tooth decay.
- * At the behest of the public health unit in 1953, the City of Windsor began fluoridating our water with sodium fluoride and then changed to hydrofluorosilicic acid (a substance more readily absorbed by the body) in the early '60s.

Hydrofluorosilicic Acid

H₂SiF₆:
hazardous toxic waste derived from scrubbers of phosphate fertilizer industries


Contaminants include trace amounts of:

- Arsenic (As)
- Lead (Pb)
- Mercury (Hg)
- Cadmium (Cd)
- Chromium (Cr)
- Radionuclides (Ra, Po)



Photo: www.fluoridealert.org


Calcium Fluoride vs. Hydrofluosilicic Acid



CaF₂

- Naturally occurring
- Safe to hold with bare hands
- Sparingly soluble in neutral pH water
- Fluoride toxicity reduced by calcium
- LD 50 = oral rat, **4250 ppm**

Source: REAGENTS, INC.-MSDS-CALCIUM FLUORIDE



H₂SiF₆

- Man-made toxic waste product
- Highly corrosive liquid that requires full personal protective equipment to handle legally
- Fluoride toxicity enhanced by co-contaminants

Acute oral toxicity
 -LD 100 = guinea pig, **80 ppm** (2 % solution)
 Source: Issuing date 06.07.2009 SOLVAY Chemicals

Dilution is Not a Solution to Pollution

“Hazardous Waste”
 Hazardous Waste Act

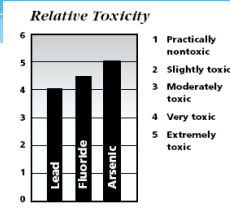
“Toxic Substance”
 Canadian Environmental Protection Act:

- Bioaccumulative
- Toxic
- Anthropogenic
- Persistent

“Dangerous good/class 8 corrosive substance.”
 Transport Canada

It is illegal to dump H₂SiF₆ anywhere in the environment!
 Health Canada failed to consider long-term or combined effects on the environment, infrastructure or general health of adding HFSA to municipal water supplies

Relative Toxicity



1 Practically nontoxic
 2 Slightly toxic
 3 Moderately toxic
 4 Very toxic
 5 Extremely toxic

Fluoride not removed by wastewater treatment

“Fluoride passes through the wastewater treatment process unchanged...The West end of Lake Erie gets a huge fluoride injection as a result of these sources.”

Peter van Caulart, Environmental Training Institute in Ontario


- H₂SiF₆ added to the Detroit River annually
- * Windsor/Detroit area >**4.2 million lbs/year** (calculated at 1lb/person/year)
- * **PLUS** permitted loading from the MISA site
- * **PLUS** discharged from other fluoridating communities along the river & Lake St. Clair



Water Fluoridation Increases Toxic Elements in Municipal Water

ppm	EC	HC
F	0.12	1.50
Na	±10%	20.0
Cu	0.002	1.0
Pb*	0.001	0.010
Zn	0.030	0.5
Cd*	0.00017	0.005
As*	0.005	0.010
radio-nuclid e	NA	0.02 (as U)
Cr*	0.001	0.05
Hg	0.000004	0.001

W.U.C. currently fluoridates to a level of 0.52-0.75 ppm (taken from the 2010 Annual Water Report)



- Added from municipal and industrial sources
- Infrastructure corrosion products of AWF
- Contaminants in HFSA

*Both contaminant of HSFA + corrosion product

Species at Risk Act S.C. 2002, c. 29 Assented to 2002-12-12


- * the Government of Canada is committed to conserving biological diversity and to the principle that, if there are threats of serious or irreversible damage to a wildlife species, cost-effective measures to prevent the reduction or loss of the species should not be postponed for a lack of full scientific certainty.
- * stewardship activities contributing to the conservation of wildlife species and their **habitat** should be supported to prevent species from becoming at risk,
- * the **habitat** of species at risk is key to their conservation.
- * "**habitat**" means (a) in respect of aquatic species, spawning grounds and nursery, rearing, **feeding**, migration and any other areas on which aquatic species depend directly or indirectly in order to carry out their life processes, or areas where aquatic species formerly occurred and have the potential to be reintroduced;

FLUORIDE IS NOT REMOVED FROM WASTEWATER & DISRUPTS THE FOOD WEB OF PROTECTED SPECIES

= AGAINST FEDERAL LAW

7 of 8 Indigenous Ontario Turtles Species at Risk Listed

SARA Protected Keystone F sensitive feeder sp



Fluoride < 0.12 ppm

SARA Protected



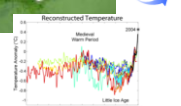


Diagram showing the life cycle of a turtle: Egg (2 weeks, aquatic) → Hatchling (20 months, aquatic) → Adult (20 months, aquatic). A crayfish is shown as a sensitive feeder species.

How Fluoridation Is Slowly Killing Lake St. Clair & Lake Erie



1. AWF increases the mass of water
2. "Heavy" water has an increased heat capacity
3. Lake Erie and Lake St. Clair are shallow and warm to begin with
4. Warm water with a heavy load of dissolved constituents (potential food) grows bacteria and algae
5. Overgrowth starves higher aquatic organisms of oxygen, increases CO₂
6. Dead Lakes warm air & release GHGs



We Have a Duty to Protect the Environment That Sustains Us



- * **The City of Windsor is licensed to conduct fluoridation. With this comes culpability in the event of environmental damage.**
- * **Health Canada does not regulate H₂SiF₆. As such, the agency has no standing in the matter. Its endorsements will not shield the City of Windsor from liability.**

Legal Implications of Fluoridation:

- * Violates the federal Species At Risk Act
- * Damages the environment & livelihood
 - * First Nations (Nanfan Treaty 1701)
 - * Agri-food Industries
 - * Fisheries
- * Damage to private property
 - * Homeowners
 - * Insurance providers

WUC Has the Power to End AWF Under the Clean Water Act of 2006

- * Ontario's Clean Water Act helps protect drinking water from source to tap with a multi-barrier approach that stops contaminants from entering sources of drinking water - lakes, rivers and aquifers.
- * Ontario's Clean Water Act requires that local communities - through local Source Protection Committees - assess existing and potential threats to their water, and that they set out and implement the actions needed to reduce or eliminate these threats.
- * **Empowers communities to take action to prevent threats from becoming significant.**
- * Requires public participation on every local source protection plan - the planning process for source protection is open to anyone in the community.
- * Requires that all plans and actions are based on sound science.

Recommendations

The Precautionary Principle

*If an action or policy has a suspected risk of causing harm to the public or to the environment, in the absence of scientific consensus that the action or policy is harmful, the burden of proof that it is not harmful falls on those taking the action.

We recommend the Environmental Committee insist on:

1. Provision of a full environmental assessment and baseline study that was conducted prior to initiation of Artificial Water Fluoridation. **None? Stop AWF**
2. Continuous downstream monitoring to ensure that levels do not exceed water quality guidelines of 0.12 ppm. **Not feasible? Stop AWF**
3. A guarantee that chemistry of the water discharged into the Detroit River from the Windsor sewage treatment plant is the same or better than the water that is taken out in terms of protection of aquatic life. **Not possible? Stop AWF**

Environmental Organizations Opposing Artificial Water Fluoridation

- * Canadian Association of Physicians for the Environment
- * Council of Canadians
- * EPA Headquarters Professionals' Union
- * Great Lakes United
- * National Research Council
- * International Society of Doctors for the Environment
- * American Academy of Environmental Medicine
- * Environmental Working Group
- * Environmental Health Foundation
- * Science and Environmental Health Network
- * Center for Health, Environment, and Justice
- * Goldman Prize winners (2006, 2003, 1997, 1995, 1990)

Thank you for your time