

Comment on Draft Report: Fluoride in Drinking Water, by the Federal-Provincial-Territorial Committee on Drinking Water, Health Canada

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Artificial Water Fluoridation - A Source Water Concern

Prepared for the Hamilton/Halton Source Water Protection Committee

Environmental Concerns:

- 1) Hydrofluorosilicic Acid (HFSA) is the chemical most commonly used for municipal water fluoridation. Phosphate fertilizer production causes smoke-stack emissions containing fluoride (silicofluoride) and other trace co-contaminants such as arsenic, lead and mercury. All are considered harmful environmental pollutants. By law these pollutants must be washed from smoke stack emissions, and the resultant water-based HFSA is marketed to municipalities as a cheap way to 'fluoridate' drinking water. To date, little or no toxicological research exists which adequately demonstrates HFSA is safe to drink every day, over a lifetime, at any concentration.
- 2) Halton uses approximately 1000 lbs per day. When Hamilton's new fluoridation equipment is operational Hamilton will use a similar amount per day. The Canadian Environmental Protection Agency classifies HFSA's inorganic silicofluoride as "persistent", "bioaccumulative", "toxic" and "anthropogenic" (made/released by humans). Environment Canada classifies HFSA as a "hazardous substance". The US Environmental Protection Agency classifies HFSA as "class one hazardous waste". It is illegal to dump HFSA anywhere in our environment, so how are we justifying dumping it into our public's drinking water supply?
- 3) The background levels of fluoride in the Great Lakes exceed the Canadian Water Quality Guideline (CWQG) of 0.12 ppm. Please see accompanying document Environment Canada - Canadian Water Quality Guidelines for the Protection of Aquatic Life - Inorganic Fluorides and also Environment Canada - [Guidelines at a Glance Fact Sheet on Inorganic Fluorides](#). Fluoride concentration in sewage effluent is much higher in some areas. See point #9 (below).
- 4) On May 20, 2009 Great Lakes United passed a [resolution concerning water fluoridation](#) to work toward reversing existing government policies supporting artificial drinking water fluoridation.
- 5) Increasing levels of fluoride in the environment has been a concern for several decades. The [1977 Canadian National Research Council Environmental Fluoride](#) report expressed concern after a thorough review of studies. Fluoride is toxic to aquatic life. British Columbia's salmon industry could be threatened if fluoridation was expanded in that province. At the present time BC has only about 3% of communities fluoridated. Nearby Oregon has discontinued fluoridation in several communities. [Environmental lawyer Brent Foster](#) states his concerns.

6) Less than 1% of treated drinking water is consumed for drinking water, therefore 99% of the HFSA is wasted and returned to the environment and source water. These stats are confirmed in Hamilton Board of Health report referred to in point #9.

7) Ongoing research indicates that the use of HFSA in treated water leaches lead from infrastructure and fittings in homes so that lead levels at the tap and the sewage outflow are higher than lead levels in treated water leaving the water treatment plant.

Research by Master and Coplan 1999 and Westendorf 1975 provide evidence that fluoride in drinking water increases blood levels and interferes with acetylcholine esterase.

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

Recent analysis in Thunder Bay, Ontario (see below) shows that all 3 chemical compounds used in artificial water fluoridation increase the lead content in drinking water when lead pipes (and fittings containing lead) are used.

Fluoridation Impacts on Water Chemistry P3-4, Report No. 2009.123, Thunder Bay, Ontario, Board of Health Report, July 20, 2009

“The drinking water produced from the Bare Point Water Treatment Plant is taken from Lake Superior and then treated. Water quality testing results of this source water have continually shown that the lake Superior water is of high quality, is soft, and of low alkalinity. Testing has also demonstrated that the water is very low in dissolved major ions and metals. These characteristics mean that the water is of excellent quality and as a result has little buffering capacity - the ability to resist changes in the water chemistry.

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.”

8) Fluoride and lead are both persistent bio-accumulative elements. The amount consumed together with the life span of individuals results in the total accumulative effect. The ideal goal for these contaminants would be zero. Provincial allowable levels should only be viewed as maximum safe limits with a “less is better” goal in mind.

9) Some Ontario municipal reports are now stating concerns about fluoride levels in source water and waste water. The City of **Hamilton's** [Water Fluoridation Report BOH08024](#) presented to the Board of Health July 9th, 2008 states source water and waste water concerns (page 7):

“Environmental Pollution

The Woodward WTP produces approximately 350 million liters of water per day and adds HFS to reach a level about 0.7 mg/L of fluoride. Less than 0.1% (in an email from the General Manager of Public Works, City of Hamilton it was confirmed that this figure is incorrect and should read 1% not 0.1%) of this water is consumed for drinking water and given that the primary target of water fluoridation are children, the water fluoridation therefore potentially serves only less than 0.5% of the total water produced. Most of the water provided to the community returns back in the form of sewage. The wastewater has high concentration of fluoride compared with potable water because of the fluoride added due to toothpaste use and some industrial discharges. A sample of the wastewater was tested for fluoride and the concentration was approximately 1.2 mg/L. Very little fluoride is removed in the wastewater treatment process and effluent had fluoride concentration of 1.05 mg/L.

There are many studies about the impacts of fluoride in aquatic environment and generally there is a consensus that fluoride concentration of about 0.6-0.7 mg/L has detrimental impact on aquatic life. If water fluoridation is stopped, it may be possible that the wastewater fluoride concentration would drop by 0.5-0.6 mg/L, which will be beneficial to aquatic environment.

The Canadian Council for Ministers of the Environment (CCME) is currently in the process of finalizing a Canada-wide Strategy for the Management of Municipal Wastewater. The draft strategy was posted for public consultation and comments. The draft strategy proposed a compliance requirement of end of the pipe toxicity testing for the wastewater treatment plants. It is anticipated that this requirement will be included in the Certificate of Approval for the Woodward WWTP upgrades. **The fluorides in wastewater can't be removed in the treatment processes and as such the toxicity associated with it will be a significant challenge, if source controls are not implemented. Failure to achieve toxicity targets will require substantial future investments in the wastewater treatment systems.”**

Toronto's recent report on biosolids included some concern about sewage sludge fluoride levels. The [Biosolids Master Plan Update](#) states that as a requirement of the US EPA ongoing review of the Targeted National Sewage Sludge Survey (TNSSS) data on levels of fluoride along with other pollutants are being collected because of their **widespread use and emerging concern**. (Appendix G, Section 2.7)

Land application of pellets produced from biosolids or sewage sludge can add further fluoride to surface water and possibly ground water therefore increasing the source water areas that are affected in addition to the Great Lakes. Adding more fluoride to soil in agricultural areas in turn further contaminates our food supply.

Health Concerns:

As Source Water Committees are generally focused on an environmental frame of reference it is not typical that health concerns are generally reviewed. However, human health partially depends on

potable source water. The following points are presented to provide evidence that increasing exposure to fluorides is becoming a health concern.

1) The 2006 NRC report Fluoride in Drinking Water reveals evidence of health effects from overexposure to fluoride which can include neurotoxic, endocrine, bone, immune system and gastrointestinal problems. In the Fall of 2008 The Canadian Association of Physicians for the Environment (CAPE) established a [policy statement in opposition to water fluoridation](#). Please also view the [Professionals Statement to End Fluoridation](#) signed by over 2600 medical, scientific and environmental professionals.

2) Dental Fluorosis is a biomarker of systemic overdose of fluoride. It ranges from very mild presenting as white flecks in tooth enamel to a severe state where the tooth enamel is brown and chipping off. The City of Hamilton does not have the resources to produce formal dental reports to indicate the level or prevalence of this malformation in children's teeth. Halton produces formal dental reports approximately every two years. The most recent Halton Health and Social Services Report, [Water Fluoridation in Halton Region MO-37-08](#) (chart page 5) reveals that 48% of Oakville 9 and 13 year old children have dental fluorosis (Halton dental surveys 2005-2007). This percentage is almost 5 times higher than the expected rate of 10% of dental fluorosis which was anticipated in the population when the practice of water fluoridation began in the 1940's.

3) Total intake of dietary and environmental fluoride is a concern as there are numerous fluoride sources from processed food and beverages, dental products/treatments, consumer products, emitting industries, [fluoride and fluorinated pesticides](#), and use of sulfuryl fluoride as a fumigant (residue remains on many foods such as almonds, cashews which are not washed prior to consumption.)

4) On May 29th of this year (announced October 15th), the California State Proposition 65 [Carcinogen Identification Committee](#) provided the EPA Office of Environmental Health Hazard Assessment advice on the relative priority of 38 chemicals for possible Hazard Identification. The committee also recommended 9 of these 38 chemicals be placed in a 'high' priority group, including fluoride and its salts (including silicofluoride). [US EPA scientists](#) have previously stated cancer as one of their concerns with water fluoridation.

5) There is evidence that our food supply is becoming contaminated with fluoride. This is especially a concern for infants because of their decreased ability to excrete toxins. A recent study published in the Journal of the American Dental Association, October 2009 found that all infant formulas, whether ready to use or concentrated, contain fluoride [Table 1](#) JADA, Vol. 140 a.1231. [Health Canada's Fluoride in Drinking Water](#) document also states infant formula contains high levels of fluoride. Section 10.1 Dental Fluorosis

"As well, many infant formula preparations contain high levels of fluoride. Many of these are supplied in concentrated formulations and, when reconstituted with fluoridated water, can lead to an increased risk of dental fluorosis."

Should Source Water Protection Committees be concerned with this ever increasing exposure to fluorides and subsequent environmental and health harm?

Do we trade water sustainability for a firmly held but unscientific belief that adding toxic waste endlessly into the downstream environment is justified because it may minimally reduce cavities?

Information compiled by Cindy Mayor, Citizens for a Safe Environment