

**From:** Jennifer Marett <

**Sent:** January-19-19 7:39 AM

**To:** Jennifer Alexander <[jaxander@tecumseh.ca](mailto:jaxander@tecumseh.ca)>; Laura Moy <[lmoy@tecumseh.ca](mailto:lmoy@tecumseh.ca)>

**Subject:** Letters Concerning Fluoride and Water Fluoridation

Dear Jennifer and Laura,

Please find attached 3 documents I have written concerning fluoride and water fluoridation. Please add these documents to the public documents for the fluoride meeting on January 29<sup>th</sup>.

I have been reading extensively about water fluoridation, fluoride and fluorosis for approximately 4 years now. My interest in the subject began with a family health crisis. At the time the family member experiencing the health crisis was living in a fluoridated community.

Sincerely,

Jennifer Marett, R.D.  
Guelph, Ontario

I am a Registered dietitian in Guelph, Ontario and I currently work with adults with gastrointestinal diseases and functional disorders. I have recently become interested and concerned with the long-standing practice of water fluoridation. My first reason for concern is the possible risk of chronic fluoride toxicity and its impact on an individual's health. This concern is shared by the US National Research Council, The US Agency for Toxic Substances and Disease Registry and Health Canada.

In the U.S. National Research Council's 2006 publication, *Fluoride in Drinking Water A Scientific Review of EPA's Standards*<sup>i</sup>, it is stated that the major dietary source of fluoride for most people in the United States was identified as "fluoridated municipal (community) drinking water, including water consumed directly, food and beverages prepared at home or in restaurants from municipal drinking water, and commercial beverages and processed foods originating from fluoridated municipalities".

The National Research Council also identified a number of population subgroups "whose water intake is likely to be substantially above the national average for the corresponding sex and age group. These subgroups include people with high activity levels (e.g. athletes, workers with physically demanding duties, military personnel); people living in very hot or dry climates, especially outdoor workers; pregnant or lactating women; and people with health conditions that affect water intake. Such health conditions include diabetes mellitus, especially if untreated or poorly controlled; disorders of water and sodium metabolism, such as diabetes insipidus; renal problems resulting in reduced clearance of fluoride; and short-term conditions requiring rapid rehydration, such as gastrointestinal upsets or food poisoning".

A figure on page 85 of this report clearly indicates that a bottle-fed infant where fluoridated tap water is used to make up formula, will exceed the US EPA's safe reference dose for fluoride (0.05 mg/kg/day).

The US Agency for Toxic Substances and Disease Registry (ATSDR), in their publication *Toxicological Profile for Fluorides, Hydrogen Fluoride, and Fluorine*<sup>ii</sup> state that "human breast milk contains very little fluoride (about 0.01 mg/L) and provides <0.01 mg fluoride/day". An infant exclusively fed formula reconstituted with fluoridated municipal water containing between 0.5 and 0.8 mg/L will be exposed to far greater levels of fluoride. The ATSDR also states that "absorption may be different in neonates because of the immaturity of their gastrointestinal tract and their larger skin surface area in proportion to body weight" and that "infants have an immature blood-brain barrier". In light of these facts it is important to recognize that fluoride is both a known toxin and neurotoxin.

In Health Canada's publication, *Guidelines for Canadian Drinking Water Quality: Guideline Technical Document – Fluoride*<sup>iii</sup>, Table B3 shows that babies fed milk-based formula made with fluoridated water will receive a fluoride intake that is significantly higher than the adequate intake (AI) set by the Institute of Medicine (IOM).<sup>iv</sup>

In the U.S. the American Dental Association and the Centers for Disease Control both advise using unfluoridated water to mix formula if mothers wish to avoid dental fluorosis but not Health Canada.

The second reason for concern is that many communities in Ontario, including Toronto<sup>v</sup>, Ottawa<sup>vi</sup>, Hamilton<sup>vii</sup> and London<sup>viii</sup>, use the fluoridation chemical hydrofluorosilicic acid (HFSA) to fluoridate their municipal drinking water.

Hydrofluorosilicic acid is one of many dangerous goods documented in *Transport Canada's 2016 Emergency Response Guidebook*.<sup>ix</sup> Hydrofluorosilicic acid (ID No. 1778) is included in their list of substances considered toxic and/or corrosive (non-combustible) and they recommend that First Responders during the initial phase of a hydrofluorosilicic acid incident follow specific guidelines (see guide #154).

This raises several questions :

- 1) Why is it that Transportation Canada recognizes hydrofluorosilicic acid as a hazardous substance and yet Health Canada does not seem to be concerned with diluting it in municipal drinking water?

- 2) Why is hydrofluorosilicic acid, permitted to be sold as a fluoridation chemical to many Canadian municipalities to add to municipal drinking water?
- 3) Since *Ontario's Safe Drinking Water Act (2002)*<sup>x</sup> states "dilution is no excuse for adding a contaminant to drinking water" is it legal to add hydrofluorosilicic acid to municipal water?
- 4) Is this chemical safe for human consumption?

An individual in Edmonton filed a FOIA request asking for Health Canada to provide any toxicological studies on the water fluoridation chemical hydrofluorosilicic acid. The response letter from Health Canada's Access to Information and Privacy Division, file # A-2014-00168/na, dated May 26, 2014 stated the following:

*This is in response to your request under the Access to Information Act (the Act) for: Clarified Request Text: Reports, studies, toxicology and clinical tests relating to hydrofluorosilicic acid in Canadian tap water. After a thorough search for the requested information, no records were located which respond to your request."*

Not testing for toxins does not mean the product is safe. Nor does it excuse officials charged with protecting community health from distributing an unapproved drug that is at risk of being contaminated with toxins as a prophylactic measure through the municipal water supplies.

In 2014, toxicologist, Dr. Phyllis J. Mullenix did test fluoridation products, HFSA and NaF. Her study results showed that although metal content varied with batch, every batch included a surprising amount of aluminum. In addition, all HFSA samples in the study contained arsenic, cadmium, barium and lead were other tramp contaminants.<sup>xi</sup>

Fluoride, aluminum, cadmium, barium, arsenic and lead are all recognized toxic substances according to the US Agency for Toxic Substances and Disease Registry (ATSDR).

The ATSDR has set minimum risk levels (MRL) for these substances. The following statements are taken from the MRL report:

- Chronic oral exposure of 0.05 mg/kg/day sodium fluoride can cause muscular symptoms.
- Chronic oral exposure of 1.0 mg/kg/day aluminum can cause neurological symptoms.
- Chronic oral exposure of 0.0003 mg/kg/day arsenic can cause dermatological symptoms.

ATSDR has also published toxicological profiles for fluoride, aluminum, arsenic and lead.

Please feel free to contact me regarding any questions or concerns you have regarding the content of this letter. I can be contacted via email at [jmarett@rogers.com](mailto:jmarett@rogers.com) or by telephone at (519) 836-5484.

Sincerely yours,

*Jennifer Marett, R.D.*

<sup>i</sup> <http://www.nap.edu/catalog/11571/fluoride-in-drinking-water-a-scientific-review-of-epas-standards>

<sup>ii</sup> <http://www.atsdr.cdc.gov/ToxProfiles/tp11.pdf>

<sup>iii</sup> [http://hc-sc.gc.ca/ewh-semt/consult/\\_2009/fluoride-fluorure/b-table-b-tableau-eng.php#tab3](http://hc-sc.gc.ca/ewh-semt/consult/_2009/fluoride-fluorure/b-table-b-tableau-eng.php#tab3)

<sup>iv</sup> <http://www.ncbi.nlm.nih.gov/books/NBK109832/#ch8.s13>

<sup>v</sup>

<http://www1.toronto.ca/City%20Of%20Toronto/Toronto%20Water/Files/pdf/D/Drinking%20Water%20Annual%20Report%202015%20FINAL.pdf>

<sup>vi</sup> [http://documents.ottawa.ca/sites/documents.ottawa.ca/files/documents/2015Annual\\_Report-Lemieux\\_en.pdf](http://documents.ottawa.ca/sites/documents.ottawa.ca/files/documents/2015Annual_Report-Lemieux_en.pdf)

[http://documents.ottawa.ca/sites/documents.ottawa.ca/files/documents/2015Annual\\_Report-Britannia\\_en.pdf](http://documents.ottawa.ca/sites/documents.ottawa.ca/files/documents/2015Annual_Report-Britannia_en.pdf)

<sup>vii</sup> [https://d3fplf1m7bbt3.cloudfront.net/sites/default/files/media/browser/2014-12-01/2015\\_woodward\\_annual\\_moe.pdf](https://d3fplf1m7bbt3.cloudfront.net/sites/default/files/media/browser/2014-12-01/2015_woodward_annual_moe.pdf)

<sup>viii</sup> [http://www.watersupply.london.ca/Annual\\_Reports/2015/2015\\_ELGIN\\_Annual\\_Report\\_FINAL.pdf](http://www.watersupply.london.ca/Annual_Reports/2015/2015_ELGIN_Annual_Report_FINAL.pdf)

<sup>ix</sup> <https://www.tc.gc.ca/media/documents/tdg-eng/EnglishERGPdf.pdf>

<sup>x</sup> <https://www.ontario.ca/laws/statute/02s32>

<sup>xi</sup> <http://www.gloucester-ma.gov/DocumentCenter/View/3044>

## Preterm Birth

Globally, more than 10% of babies are born preterm.<sup>i</sup> All preterm infants are at risk for serious health problems, particularly those born earliest. Preterm infants are at greater risk of medical complications, long-term disabilities and, in some severe cases, even death.

Preterm infants are at increased risk of respiratory distress syndrome, chronic lung disease, cardiovascular disorder, asthma, hearing and vision loss than babies born during the normal gestation period<sup>ii</sup>. Preterm birth also increases the risk of cerebral palsy<sup>iii</sup>, congenital hypothyroidism<sup>iv</sup>, ADHD<sup>v</sup> and autism<sup>vi</sup>.

Preterm birth in Canada is a growing issue, with rates of preterm birth on the rise across the country, particularly among Aboriginal populations<sup>vii</sup>. In Canada, 7.8% of babies are born preterm which translates to about 29,000 preterm babies<sup>viii</sup>.

Ontario has a preterm birth rate of 8.1%, which is above the national average of 7.8%. What is concerning about this statistic is that Ontario is the most populated province in Canada. In 2010, It was estimated that there were 21,712 preterm births in Ontario<sup>ix</sup>. Of those 10,856 were born <37 weeks gestation, 9,292 were born between 32 – 36 weeks gestation and 1,564 were born < 32 weeks gestation<sup>x</sup>.

In February 2016, John D. MacArthur, published an excellent book “Pregnancy and Fluoride Do Not Mix – Prenatal Fluoride and Premature Birth Preeclampsia Autism” which reviews the fluoride and premature birth research.

In his book, MacArthur mentions that a 2009 public-health study, Relationship Between Municipal Water Fluoridation and Preterm Birth in Upstate New York, was undertaken by researchers from the Department of Epidemiology & Biostatistics at the State University of New York (SUNY). Their research finding was as follows:

“Domestic water fluoridation was independently associated with an increased risk of preterm birth in logistic regression, after controlling for age, race/ethnicity, neighborhood poverty level, hypertension and diabetes.”<sup>xi</sup>

One reason for this may be that pregnant women have been identified as a population subgroup whose water intake is likely to be substantially above the national average for the corresponding sex and age group.<sup>xii</sup>

It is interesting to note that Ontario also has one of the highest rates of water fluoridation in Canada and has over 50 communities with naturally occurring fluoride levels above 1 mg/L in their municipal drinking water.

The American Society of Hematology states that “Mild anemia is normal during pregnancy due to an increase in blood volume. More severe anemia, however, can put your baby at higher risk for anemia later in infancy. In addition, if you are significantly anemic during your first two trimesters, you are at greater risk for having a pre-term delivery or low-birth-weight baby. Being anemic also burdens the mother by increasing the risk of blood loss during labor and making it more difficult to fight infections.”

World renowned fluoride and fluorosis researcher, Dr. A.K. Susheela, has shown that elevated fluoride levels in pregnant women is linked to anemia, premature birth and low-birth weight infants<sup>xiii</sup>.

The following summarizes the findings of her research:

“A program emphasizing a greatly reduced intake of fluoride and the inclusion of essential nutrients in the daily diet during pregnancy led to a striking increase in hemoglobin, an improved body mass index, fewer low birth weight babies, and reduced numbers of pre-term deliveries.”<sup>xiv</sup>

Six of the eight Hospitals in Ontario, affiliated with the Canadian Neonatal Network, that provide care to neonates are located in fluoridated cities and are dependent on the fluoridated municipal drinking water for patient care.

These hospitals include:

London Health Sciences, London  
Hamilton Health Sciences, Hamilton  
Mount Sinai Hospital, Toronto  
Hospital for Sick Children, Toronto  
Sunnybrook Health Sciences, Toronto  
Children’s Hospital of Eastern Ontario and The Ottawa Hospital

It is imperative that The Society of Obstetricians and Gynaecologists of Canada, the Canadian Neonatal Network, Health Canada, and the Ontario Ministry of Health and Long Term Care strategically invest in innovation and research to accelerate progress in the prevention of preterm birth in Ontario and throughout the country.

One promising area of research is testing at risk pregnant women for fluorosis according to Dr. Susheela's protocol.<sup>xv</sup>

Blessings,

Jennifer Marett, R.D.

Guelph, Ontario

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<sup>i</sup> March of Dimes et al., Born Too Soon: The Global Action Report on Preterm Birth," ed. C. Howson, M. Kinney, and J. Lawn (Geneva, Switzerland 2012).

<sup>ii</sup> <http://www.statcan.gc.ca/pub/82-625-x/2016001/article/14675-eng.htm>

<sup>iii</sup> [http://apps.who.int/iris/bitstream/10665/183037/1/9789241508988\\_eng.pdf](http://apps.who.int/iris/bitstream/10665/183037/1/9789241508988_eng.pdf)

<sup>iv</sup> [http://pediatrics.aappublications.org/content/125/Supplement\\_2/S31](http://pediatrics.aappublications.org/content/125/Supplement_2/S31)

<sup>v</sup> <http://pediatrics.aappublications.org/content/pediatrics/127/5/858.full.pdf>

<sup>vi</sup> <http://www.webmd.com/brain/autism/news/20151228/study-extremely-premature-babies-at-greater-risk-for-autism>

<sup>vii</sup> Canadian Premature Babies Foundation, Premature Birth in Canada: An Environmental Scan Report – Final).

<sup>viii</sup> Canadian Premature Babies Foundation, Premature Birth in Canada: An Environmental Scan Report – Final).

<sup>ix</sup> <https://www.bornontario.ca/assets/documents/specialreports/Perinatal%20Health%20Indicators%20for%20Ontario%202012.pdf>

<sup>x</sup> <https://www.bornontario.ca/assets/documents/specialreports/Perinatal%20Health%20Indicators%20for%20Ontario%202012.pdf>

<sup>xi</sup> Hart R, Feelemyer J, Gray C, et al. Relationship between municipal water fluoridation and preterm birth in Upstate New York, 2009. American Public Health Association Meeting and Expo. No. 9, 2009.

<sup>xii</sup> National Research Council of the National Academies. Fluoride in Drinking Water A Scientific Review of EPA's Standards.

<sup>xiii</sup> <http://fluorideandfluorosis.com/Activities/Anaemia.html>

<sup>xiv</sup> Susheela, A.K. Anemia in Pregnancy: An Easily Rectifiable Problem. Fluoride (April – June 2010); 43 (2): 104 – 107.

<sup>xv</sup> Susheela, A.K. Fluorosis and Associated Health Issues. Indian Journal of Practical Pediatrics (2015); 17(2) 138 – 146.

The US National Research Council's 2006 publication, *Fluoride in Drinking Water A Scientific Review of EPA's Standards*, is considered the most comprehensive work ever done on the toxicity of fluoride.<sup>i</sup>

### Sources of Fluoride Exposure – Drinking Water

On page 24, under the subheading *General Population* it states the following:

"The major dietary source of fluoride for most people in the United States is fluorinated municipal (community) drinking water, including water consumed directly, food and beverages prepared at home or in restaurants from municipal drinking water, and commercial beverages and processed foods originating from fluoridated municipalities."

### High Intake Population Subgroups

On page 30, under the subheading *High Intake Population Subgroups* it states the following:

"EPA, in its report to Congress on sensitive subpopulations (EPA 2000b), defines sensitive subpopulations in terms of either their response (more severe response or a response to a lower dose) or their exposure (greater exposure than the general population. Hence, **it is appropriate to consider those population subgroups whose water intake is likely to be substantially above the national average for the corresponding sex and age group. These subgroups include** people with high activity levels (e.g. athletes, workers with physically demanding duties, military personnel); people living in very hot or dry climates, especially outdoor workers, pregnant or lactating women; and **people with health conditions that affect water intake. Such health conditions include diabetes mellitus, especially in untreated or poorly controlled; disorders of water and sodium metabolism, such as diabetes insipidus; renal problems resulting in reduced clearance of fluoride;** and short-term conditions requiring rapid rehydration, such as gastrointestinal upsets or food poisoning (EPA 2000a)."

### Effects on the Endocrine System

Chapter 8 reviews the effects of fluoride on the endocrine system. On page 264 it states the following:

"Increased serum glucose and increased severity of existing diabetes have been reported in animal studies at fluoride intakes of 7 – 10.5 mg/Kg/day (Table 8-1). **Impaired glucose tolerance in humans has been reported in separate studies** at fluoride intakes of 0.07 – 0.4 mg/Kg/day, **corresponding to serum fluoride concentrations above about 0.1 mg/L. The primary mechanism appears to involve inhibition of insulin production.**"

### Recommendations

One of the recommendations on page 267 is as follows:

**"The effects of fluoride on various aspects of endocrine function should be examined further, particularly with respect to a possible role in the development of several diseases or mental states in the United States."**

"Major areas for investigation include the following:

- thyroid disease (especially in light of decreasing iodine intake by the U.S. population;
- nutritional (Calcium deficiency) rickets
- calcium metabolism (including measurements of both calcitonin and PTH);
- pineal function (including, but not limited to, melatonin production); and
- **development of glucose intolerance and diabetes"**

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<sup>i</sup> <https://www.nap.edu/catalog/11571/fluoride-in-drinking-water-a-scientific-review-of-epas-standards>