

March 19, 2012

Prepared for The City of Windsor City Council

by **Donna Mayne**

Fluoride Free Windsor

March 19, 2012

Additional Information

RE: **Report No. 45 of the
Environment and Transportation
Standing Committee**

On October 7th, we emailed a list of questions to W.U.C. and were told to expect answers in their report to council. The following were among the questions we submitted:

- Do levels of arsenic and lead increase with fluoridation? If so, by how much?
- What equipment do you use to test for undissociated fluoride ions?
- When did Windsor Utilities begin to use hydrofluorosilicic acid to artificially fluoridate our water? What prompted the change from sodium fluoride? Was the public ever consulted about the change?

The report submitted by W.U.C. a few weeks ago failed to answer these fundamental questions. However, the report clarified one critical issue that council cannot ignore. We asked: Can W.U.C. provide clinical evidence to show HFS is safe?

The report refers to the National Sanitation Foundation's regulatory statute "Standard 60," which establishes minimum requirements to ensure the safety of fluoride-delivery agents. Compliance demands "a toxicology review" of such agents. However, as some of you heard at the meeting, W.U.C. General Manager, John Stuart confirmed there are **no** toxicology studies of HFS that he is aware of. So the answer to our question is, no. There is no evidence that demonstrates HFS is safe.

It was also confirmed at the Feb. 29th fluoridation meeting that, contrary to public claims by the Medical Officer of Health, HFS is indeed a byproduct of phosphate fertilizer production. More importantly, HFS is classified as toxic waste and is illegal to dump anywhere in the environment - unless it is funneled into tankers for sale as a fluoride-delivery agent. This simple act results in reclassification as a commercial product but make no mistake, it is still hazardous, still toxic, still persistent and still bio-accumulative, even when it's diluted.

Mr. Stuart also provided me with information that should give council pause for serious contemplation. The fluoride level of Windsor's raw water intake is currently 0.15ppm. This exceeds the 0.12ppm level set in the federal Species at Risk Act. Meanwhile, the W.U.C.'s artificial water fluoridation regimen calls for outputs that average 0.65ppm. Since nearly all of this water returns to the environment - where legislation prohibits dumping of HFS in the first place - AWF's negative impact on our ecosystem is undeniable.

Time and time again, history has demonstrated irrefutably that our well-being is linked to the health of our environment. When proponents of artificial water fluoridation fail to acknowledge harm is being done to our environment, they are also ignoring a legitimate threat to human health.

Dear Committee Members:

· During my presentation about the environmental and potential legal ramifications of artificial water fluoridation, you raised some pertinent questions. For this, I thank you. I fully support a complete and thorough airing of this issue.

To-wit, I respectfully submit the following:

Councillor Sleiman: In response to your stated interest in finding expert analysis, we would ask you to focus your search on peer-reviewed toxicity studies and clinical trials. These, as you are aware, produce reliable results that carry significantly more weight than simple endorsements and pronouncements. (Note: As Heather Gingerich and I indicated, no clinical research was available before hydrofluorosilicic acid was chosen as the Windsor area's fluoride delivery agent. And no such research has been conducted since.) Please feel free to contact anyone on the attached list. They have all agreed to provide you with insight and information, as needed.

Also below is a video that features a **Nobel Laureate in Medicine, a neuro-pharmacologist, environmental chemists, a neuroscientist, and a few toxicologists - all of whom have *STUDIED* fluoride.**

<http://www.youtube.com/watch?v=88pfVo3bZLY>

Your observation that most pharmaceuticals are man-made and safe is irrefutable. However, their safety has been proven through rigorous clinical trials. Hydrofluorosilicic acid has never been subjected to such testing in the context of its appropriateness as a safe fluoride delivery agent.

Also, you might be pleased to know that Kimberly DeYong and Heather Gingerich have already taken measures to promote provincially funded dental programs to ensure better oral health for those who cannot afford to see a dentist.

Councillor Payne: Your statement that people opposing fluoridation will never agree with people endorsing it is only correct if Health Canada fails to provide the clinical data that proves H_2SiF_6 is indeed safe for human ingestion.

To date, Health Canada has not provided any studies because they believe it to be safe when mixed with water.

"Fluoridated drinking water is not a source of exposure to hydrofluorosilicic acid. When added to water, fluorosilicate compounds readily hydrolyse completely to release fluoride ions, which means that drinking water is not a source of exposure to these compounds. As a result, the research conducted to date has focused on levels that would result from exposures in occupational settings."

According to Heather Gingerich, complete hydrolysis is a physical impossibility. Even if it were possible, and it somehow became safe when mixed with water, why would it be illegal for industry to dispose of it anywhere in the environment?

Councillor Hatfield: I was dismayed to receive a letter from someone who thought we were using "scare tactics" by raising the legal implications of pending legislation as it might relate to artificial water fluoridation. Please be assured our intentions were only meant to supply councillors with the most current information that, in this case, could protect you. And we do not use "tactics." We are using the proper channels to raise valid public concerns. Also know that we are pleased that you have instructed the city's legal staff investigate further. For your convenience, my reference to **Standard of Care** is in section 19 of the following:

http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_02s32_e.htm

I remember as a young girl, our family doctor warning my mother about fluoride. For members interested in learning about its health risks, The National Academy of Sciences report (NAS: Toxicological Risk of Fluoride in Drinking Water, 2006) outlines in great detail the detrimental effects fluoride has on our bodies.

I have a compromised endocrine system and have family members who have dysfunctional thyroids, so I was more than a little disconcerted to read how fluoride suppresses thyroid function. This 507-page report took a dozen doctors and scientists over 3 years to complete. You can read it here:

http://www.nap.edu/catalog.php?record_id=11571

Also find attached a statement from a leading Canadian authority on preventive dentistry and fluoride, Dr. Hardy Limeback. Ironically, until his involvement in the above-mentioned research, he promoted fluoride.

Respectfully,

Donna Mayne

519 966 5373

To whom it may concern:

Nov. 15, 2011

I served 3.5 years on the US National Academies of Sciences Subcommittee on Fluoride in Drinking Water. The NAS is sometimes referred to as the 'Supreme Court of Science', an organization that sets up unbiased (or balanced) committees to review scientific issues of concern to Americans. The committee on which I served examined the health effects of fluoride in drinking water.

Our report, published March 22, 2006 and can be found online at http://www.nap.edu/catalog.php?record_id=11571

Our committee was funded by the US EPA - we did not examine the benefit of fluoridation but we certainly reviewed all relevant literature on the toxicity of fluoride, including those at low levels of intake, and the effects of fluoridation.

It has taken more than 5 years for the EPA to respond to our report. It now acknowledges that fluoride in drinking water poses a problem and it has lowered its recommendation for levels of fluoride in drinking water to 0.7 mg/L (ppm). The American Dental Association and the Center for Disease Control in the US both agree that fluoridated tap water should not be used to make up infant formula, since that increases the risk of dental fluorosis. To me, dental fluorosis is a biomarker for fluoride poisoning. Health Canada, taking the recommendation of only profluoridation experts, failed to come up with the same warnings as in the USA but then Health Canada does not set fluoridation policy. Neither do the provinces. Municipalities set policies such as water fluoridation. As far as I know, Public Health Officials have made no effort to inform expectant mothers and mothers of newborn babies to avoid using fluoridated city tap water for making up infant formula. Their inaction is regrettable.

I have personally conducted years of funded research at the University of Toronto on the topic of fluorosis (fluoride poisoning) and bone effects of fluoride intake. A bone study, for which we received national funding, comparing hip bones of people who live in Toronto (fluoridated since 1963) to the bones of people from Montreal (Montreal has never been fluoridated), suggests disturbing negative changes in the bone quality of Torontonians (see attached). This is NOT GOOD.

Since we studied a cross section of the population as they were selected for hip replacement, we were unable to examine only those people who were exposed to fluoridation for a lifetime. If we had been able to do this, we would have seen a much greater negative effect of fluoride since fluoride accumulates with age (our study confirmed that). Studies like ours indicate that not only does extra fluoride in the water cause defective enamel (that is VERY expensive to treat) but also defective bone.

The NAS committee examined the literature on the effects of fluoride on bone up until 2006. Since that time there have been more studies to confirm the link between fluoridation and bone changes, as well as a link to bone cancer. Our Toronto vs Montreal study was not included in the 2006 review by the US National Academies of Sciences because it only just got published in 2010.

I am also the co-author of studies that show that too much fluoride accumulation in the dentin of teeth (the tissue that supports enamel) causes its properties to change as well. Fluoride has NOT been shown to be safe and effective. In fact, as more and more peer-reviewed studies on fluoride toxicity appear in the literature, it has become clear to me that the pendulum is certainly shifting to 'Not safe, and no longer effective'.

As a practicing dentist, I have been diagnosing and treating patients with dental fluorosis for close to 20 years. My research on dental fluorosis (confirmed by the studies reported in the 2006 NRC report as well as the York review) show fluoridation significantly increases the numbers of patients seeking expensive cosmetic repairs. No one in public health has ever accounted for the added costs in treating dental fluorosis when considering the cost-benefit ratio of fluoridation.

Our 2006 NRC (NAS) report also concluded that there is a likelihood that fluoride can promote bone cancer. On page 336 it is stated *Fluoride appears to have the potential to initiate or promote cancers, particularly of the bone, but the evidence to date is tentative and mixed (Tables 10-4 and 10-5)*. This alone should force the EPA to set a fluoride maximum contaminant level goal for fluoride in drinking water at ZERO (as it did for arsenic). The EPA has not yet made a decision as to fluoride's carcinogenicity.

I have looked at this from all angles and I have to conclude that fluoridated cities would save money on fluoridation costs, parents would save on costly dental bills treating dental fluorosis, dental decay rates would remain unchanged or even continue to decline (as has been demonstrated in many modern fluoridation cessation studies) and the health of city residents would improve when industrial waste products are no longer added to the drinking water.

I find it absurd that industrial toxic waste is shipped to the water treatment plants in large tanker trucks and trickled into the drinking water of major cities in North America. This not only puts water fluoridation employees at risk for serious injury, but if a major spill should occur, releasing the highly corrosive and poisonous hydrofluosilicic acid into the atmosphere, people's lives would be at stake.

Individual municipalities set fluoridation policies. That means that the city is responsible for the practice of fluoridation. I could not find anywhere in the Fluoridation Act of Ontario (see http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_90f22_e.htm) that states that cities have to provide alternatives to water fluoridation should city councils decide to halt the practice.

Several Canadian cities have decided it is not worth continuing the practice of fluoridation. Recently Quebec City decided to halt fluoridation. So did Waterloo and Calgary.

There is no doubt in my mind that fluoridation has next to no benefit in terms of reduced dental decay. The modern literature is clear on that. Fluoridation cessation studies fail to show an increase in dental decay. In fact, caries rates continue to drop. Since fluoride intake delays tooth eruption, water fluoridation studies that do not make a correction for that are flawed. The York reviewers recognized this problem. Even the York review is flawed because of this. Additionally, in their systematic review, the York reviewers made a grave error in estimating benefits by lumping modern studies with very old studies when decay rates were a lot higher. In the 1950's, when fluoridation started to catch on, it was claimed that there was as much as a 40% benefit. Despite the evidence being very weak, fluoridation might have been worthwhile, especially since fluoridated toothpastes were not introduced until the late 1960's. After that, the benefit of fluoridation declined. Now, if there is any benefit at all, one could expect perhaps a 5-10% benefit in children. If half the children are already cavity free and the average decay rates are only two cavities per child it means cities have to fluoridate for 20 years in order to save one decayed surface for every fifth child. Clearly, that is NOT a policy that demonstrates fiscal responsibility and cities that do not do due diligence in terms of cost-benefit analysis are wasting tax payers money and may actually be putting their councillors in a position of liability. The claim that for every \$1 spent on fluoridation saves \$38 was never accurate and is currently exceedingly misleading. It simply is a lie.

The following is a formal discussion (deposition) of the above with proper citation of the peer-reviewed scientific literature. This literature cited is not junk science, as claimed by fluoridation promoters.

Sincerely

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STATEMENT BY DR. HARDY LJMEBACK

I am the Head of Preventive Dentistry at the University of Toronto in Toronto Canada, a professor of dentistry with a PhD in Biochemistry and a practicing dentist with 27 years experience who has done years of funded research in tooth formation, bone and fluoride.

I was one of the 12 scientists who served on the US National Academy of Sciences panel that issued the 2006 report, "Fluoride in Drinking Water: A Scientific Review of the EPA's Standards."

I would like to outline my arguments that fluoridation is ineffective and a harmful public health policy.

I. Fluoridation is no longer effective.

Fluoride in water has the effect of delaying tooth eruption and, therefore, simply delays dental decay (Komarek et al, 2005, Biostatistics 6:145-55). The studies that water fluoridation works are over 25 years old and were carried out before the widespread use of fluoridated toothpaste. There are numerous modern studies to show that there no longer is a difference in dental decay rates between fluoridated and non-fluoridated areas, a recent one in Australia (Armfield & Spencer, 2004 Community Dental Oral Epidemiology. 32:283-96).

Recent water fluoridation cessation studies show that dental fluorosis (a mottling of the enamel caused by fluoride) declines but there is no corresponding increase in dental decay (e.g. Maupome et al 2001, Community Dental Oral Epidemiology 29: 37-47).

Public health services will claim there is still a dental decay crisis. With the national average in Europe of only two decayed teeth per child (World Health Organization data), down from more than 15 decayed teeth in the 1940s and 1950s before fluoridated toothpaste, as much as half of all children grow up not having a single filling. This remarkable success has been achieved in most European countries without fluoridation. The "crisis" of dental decay often mentioned is the result, to a major extent, of sugar abuse, especially soda pop. A 2005 report by Jacobsen of the Center for Science in the Public Interest said that U.S. children consume 40 to 44 percent of their daily refined sugar in the form of soft drinks. Since most soft drinks are themselves fluoridated, the small amount of fluoride is obviously not helping.

The families of these children with rampant dental decay need professional assistance. It appears they are not getting it. Children who grow up in low-income families make poor dietary choices, and cannot afford dental care. Untreated dental decay and lack of professional intervention result in more dental decay. The York review was unable to show that fluoridation benefited poor people to any greater extent than other groups of the population. The York review, and others that followed, including the Systematic Review of the Efficacy and Safety of Fluoridation conducted recently in Australia

<http://www.nhmrc.gov.au/publications/synopses/eh41syn.htm>

and Health Canada's review of fluoridated water <http://www.hc-sc.gc.ca/ewh-semt/pubs/water-eau/2008-fluoride-fluorure/index-eng.php>

failed to identify even one double-blinded, randomized prospective clinical trial to prove the fluoridation works, after correcting for diet and delay in tooth eruption.

This means that the reviewers failed to show the level of evidence for efficacy that is required in North America for a medicine to be approved. Furthermore, most reviews admit that there is not enough evidence for safety, since properly conducted clinical trials were not designed to measure adverse health effects.

None of the reviews conducted to date addressed whether fluoridation can reduce the prevalence or severity of early dental decay in nursing infants (baby bottle syndrome). A very large percentage of dentists in North America do not accept patients on government assistance because they lose money treating these patients. In my experience, many dentists support fluoridation because it supposedly absolves them of their responsibility to provide assistance to those who cannot afford dental treatment. Even cities where water fluoridation has been in effect for years are reporting similar dental "crises."

In my opinion, Public health officials responsible for community programs are misleading the public by stating that ingesting fluoride "makes the teeth stronger." Fluoride is not an essential nutrient. It does not make developing teeth better prepared to resist dental decay before they erupt into the oral environment. The small benefit that fluoridated water might still have on teeth (in the absence of fluoridated toothpaste use) is the result of "topical" exposure while the teeth are rebuilding from acid challenges brought on by daily sugar and starch exposure (Limeback 1999, *Community Dental Oral Epidemiology* 27: 62-71), and this has now been recognized by the Centers for Disease Control.

2. Fluoridation is the main cause of dental fluorosis.

Fluoride doses by the end user can't be controlled when only one concentration of fluoride {1 part per million} is available in the drinking water. Babies and toddlers get too much fluoride when tap water is used to make formula (Brothwell & Limeback, 2003 *Journal of Human Lactation* 19: 386-90). Since the majority of daily fluoride comes from the drinking water in fluoridated areas, the risk for dental fluorosis greatly increases (National Academy of Sciences: *Toxicological Risk of Fluoride in Drinking Water*, 2006). The American Dental Association and the Dental Forum in Ireland have admitted that fluoridated tap water should not be used to reconstitute infant formula.

We have tripled our exposure to fluoride since fluoridation was conceived in the 1940s. This has led to every third child with dental fluorosis (CDC, 2005). Fluorosis is not just a cosmetic effect. The more severe forms are associated with an increase in dental decay (NAS: *Toxicological Risk of Fluoride in Drinking Water*, 2006) and the psychological impact on children is a negative one. Most children with moderate and severe dental fluorosis, the prevalence of which is higher in fluoridated areas and is not insignificant in terms of proportions of the population affected, seek extensive restorative work costing thousands of dollars per patient. Dental fluorosis can be reduced by turning off the fluoridation taps without affecting dental decay rates (Burt et al 2000 *Journal of Dental Research* 79(2):761-9).

3. Chemicals that are used in fluoridation have not been tested for safety.

All the animal cancer studies were done using sodium fluoride. There is more than enough evidence to show that even this form of fluoride has the potential to promote cancer because it accumulates in the bone and produces levels that are high enough to induce cancer (NAS: *Toxicological Risk of Fluoride in Drinking Water*, 2006). Some communities use sodium fluoride in their drinking water, but even that chemical is not the same fluoride added to toothpaste. Most cities instead use hydrofluorosilicic acid (or its salt). H_2SiF_6 is concentrated directly from the smokestack scrubbers during the production of phosphate fertilizer, shipped to water treatment plants and trickled directly into the drinking water. It is industrial grade fluoride contaminated with trace amounts of heavy metals such as lead, arsenic and radium, which are harmful to humans at the levels that are being added to fluoridate the drinking water.

In addition, using hydrofluorosilicic acid instead of industrial grade sodium fluoride has an added risk of increasing lead accumulation in children (Masters et al 2000, *Neurotoxicology*. 21(6): 1091- 1099), probably from the lead found in the pipes of old houses. This could not be ruled out by the CDC in their recent study (Macek et al 2006, *Environmental Health Perspectives* 114:130-134). None of these issues have ever been addressed by the various government sponsored reviews.

4. There are serious health risks from water fluoridation.

Cancer: Osteosarcoma (bone cancer) has been identified as a risk in young boys in a recently published Harvard study (Bassin, *Cancer Causes and Control*, 2006). The author of this study, Dr. Elise Bassin, acknowledges that perhaps it is the use of these untested and contaminated fluorosilicates mentioned above that caused the over 500% increase risk of bone cancer in young boys. The long-awaited study published by her former PhD supervisor (Dr. Chester Douglass) in no way negated these findings. The NAS committee was unsure about designating fluoride as a potential carcinogen in 2006 because we wanted to wait for the final study from the Harvard group. Now that it is published, nothing has changed (Kim FM et al. 2011, *J Dent Res.* 90(10):1171-6).

Bone fracture: Drinking on average 1 liter/day of naturally fluoridated water at 4 parts per million increases your risk for bone pain and bone fractures (National Academy of Sciences: *Toxicological Risk of Fluoride in Drinking Water*, 2006). Since fluoride accumulates in bone, the same risk occurs in people who drink 4 liters/day of artificially fluoridated water at 1 part per million, or in people with renal disease. Additionally, Brits are known for their tea drinking and since tea itself contains fluoride, using fluoridated tap water puts many heavy tea drinkers dangerously close to threshold for bone fracture.

Our recently published study on fluoride in bone from fluoridation (Chachra et al, *J Dent Res* 89(11):1219-1223, 2010) shows a negative trend in changes that have occurred in the bone of Torontonians who have lived only a portion of their lives in fluoridated Toronto. Fluoridation studies have never properly shown that fluoride is safe in individuals who cannot control their dose, or in patients who retain too much fluoride.

Adverse thyroid function: Our National Academy of Sciences report (NAS: *Toxicological Risk of Fluoride in Drinking Water*, 2006) outlines in great detail the detrimental effect that fluoride has on the endocrine system, especially the thyroid. Fluoridation should be halted on the basis that endocrine function has never been studied in relation to total fluoride intake.

Adverse neurological effects: In addition to the added accumulation of lead (a known neurotoxin) in children living in fluoridated cities, fluoride itself is a known neurotoxin. We are only now starting to understand how fluoride affects the brain. Several recent studies suggest that fluoride in drinking water lowers IQ (NAS, 2006). We need to study this more in depth.

In my opinion, having served on the NAS Committee in the US for more than 3 years, the evidence that fluoridation is more harmful than beneficial is now overwhelming and cities that avoid thoroughly considering ALL the recent data do so, in my opinion, at risk of future legal action.

Dr. Hardy Limeback PhD, DDS
Professor and Head, Preventive Dentistry University of Toronto

With respect to fluoridation the field of expertise belongs to those who have examined the biological effects of swallowing fluoride, no health authority officials acting under the mandate of their position. Fluoride Free Windsor has been in contact with the experts on this list of esteemed professionals below. They are available to assist council members in making an informed decision with respect to artificial water fluoridation. Believe one who has proved it. Believe an expert. Vi.-g;l, Aeneid Roman epic poet (70 BCE-19 BCE)

This document contains several hyperlinks to documents, videos and online sources. Therefore, to get the full benefit of this list it should be viewed online.

The Experts:

Hardy Limeback. BSc PhD DDS

Email: hardy.limeback@dentistry.utoronto.ca

Credentials: Dr. Limeback is a leading Canadian fluoride authority, a dentist and head of Preventative Dentistry at the University of Toronto. He has published papers and participated in scientific reviews on artificial water fluoridation. He would be happy to respond to specific questions posed by council members who want to educate themselves about how misleading public health is about their 'safe and effective' claim for fluoridation, contact him via his email address. See here a presentation he gave in 2008 to the International Academy of Oral Medicine and Toxicology with respect to fluoridation and the findings of the National Academy of Science Committee Review of Fluoride in Drinking Water, which he was a panel member of; see here for an interview he gave in 1999; and read here a statement he gave titled Why I Am Now Officially Opposed to Adding Fluoride to Drinking Water.

Paul Connett. PhD

Phone: 315-379-9200 Email: pconnett@gmail.com Skype: ConnettFF

Credentials: Director of the Fluoride Action Network (FAN), and the Executive Director of its parent body, the American Environmental Health Studies Project (AEHSP). He holds a bachelors degree from the University of Cambridge and a Ph.D. in chemistry from Dartmouth College and is a retired professor of environmental chemistry and toxicology at St. Lawrence University. He lives in Canton, New York. **In his fascinating presentations Dr. Connett shares his wealth of information with you, bringing new research to light, including links between fluoride and harm to the brain, bones, and endocrine system, and informing us about how the evidence that fluoridation reduces tooth decay is surprisingly weak.** He is the co-author of the book The Case Against Fluoride: How Hazardous Waste Ended Up in Our Drinking Water and the Bad Science and Powerful Politics That Keep It There. See here for a presentation Dr Connett gave in 2011 in London ON. Dr. Connett is available to council members via email, phone or Skype.

Bill Osmunson. DDS

Phone: 425-466-0100 Email: bill@teachingsmiles.com

Credentials: Dr. Osmunson has been practicing general and cosmetic dentistry for 30 years. He has a Master's in Public Health, Nutrition and Health Education. For the first 25 years of his career Dr. Osmunson aggressively promoted water fluoridation until he reviewed the science for himself and realized that artificial water fluoridation is a problem. See here a five minute explanation Dr. Osmunson gives on why he is now concerned about fluoride and water fluoridation: Professional Perspectives, Dr. Osmunson

James Beck. MD PhD

Phone: 413-286-4977 Email: beck@ucalgary.ca Skype: peskyO (that's a zero)

Credentials: M.D. Washington University School of Medicine, St. Louis, USA; Ph.D. (biophysics) University of California, Berkeley; Co-author of The [Case Against Fluoride](#). Chelsea Green, Sept 2010; Assistant professor of physiology and lecturer in physics, University of Minnesota; associate, full professor, University of Calgary; currently Professor Emeritus of Medical Biophysics, University of Calgary; See here for [reviews of the book](#). Disclaimer: 1) I have no financial or material interest in fluoridation, and 2) I do not profit from sales of The Case Against Fluoride (my royalties are donated to FAN). See here a [presentation Dr. Beck gave in Calgary](#) (whose council went on to vote to end artificial water fluoridation in 2011). Dr. Beck is available to answer the questions of council members by phone, email or Skype.

David Kennedy. DDS

Phone: (619) 222-8177 Email: davidkennedy-dds@cox.net

Credentials: [Dr. Kennedy](#) is the Past President of the International Academy of Oral Medicine and Toxicology. His BA is in Comparative Biochemistry and Physiology from the University of Kansas (1967) and his Doctorate of Dental Surgery is from the University of Missouri (1971). He is a world lecturer to the dental profession on the safety of dental materials in the human body. His lectures include (among others) addresses to the World Health Organization, the American Dental Society of Europe, the German BGD, and Brazil Rio Eco-Odonto. More recently, in 1996 he was a **presenter at the International Society for Fluoride Research XXI Conference on fluoride (Budapest), and in 1997 was involved in the Canadian Dental Association conference (Toronto) on the use of fluoride drops and tablets**. A video of Dr. Kennedy talking about water fluoridation can be viewed [here](#). Dr. Kennedy is available to answer council member's questions about the safety of ingesting fluoride.

Peter Van Caulart. Dip.A.Ed..CES.CEI

Phone: 905-892-1177 Email: pvancaulart@cogeco.ca

Credentials: Peter has been teaching master training operators of drinking water and wastewater treatment facilities since 1980; initially with Ontario MOE, then at Sheridan College and currently Canada wide with the Environmental Training Institute (ETI). As a certified adult educator, He's achieved specialist qualifications within the environmental and occupational health and safety fields and has taught more than 25,000 students. He is the Environmental Training Institute's Director and founding Vice President of [Canadians Opposed to Fluoridation \(COF-COF\)](#). Peter is available to answer any questions of council members as well as answer questions from Windsor Utility Commission by phone or by email. Provided are links to an article Peter wrote titled [Canadian Water Providers Ceasing Artificial Water Fluoridation](#) and an article titled [Fluoride: A Waste Management Issue](#).

Heather Gingerich. M.Sc.

Phone: 519-533-3123 Email: medical.geologist@gmail.com Skype: medgeo1995

Credentials: Heather is the Director of the Canadian Chapter of the International Medical Geology Association. Her expertise is in biogeochemistry (the interface between geochemistry and biochemistry) and she is PhD student leapfrogging from the University of Queensland (Australia) to the University of Guelph (Canada). Heather's BSc was from Guelph in Biological Science and her MSc was from Waterloo in Earth Science where she **specialized in environmental fluoride chemistry**. Heather's profile can be viewed [here](#). And we recommend you take the time to read this amazing article titled: Turtle Wisdom for a Fast-Paced World: Decision-Making Using Medical Geology and Indigenous Traditional Knowledge.

Pierre Jean Morin. PhD

Phone: 819-292-3045

Credentials: Co-author of the book Fluoridation: Autopsy of a Scientific Error; Co-author of Petition 299: Fluorides Added to Drinking Water are Unregulated, Unlicensed, Uncontrolled, Unethical and Illegal Drugs; Co-author of Unregulated, Uncontrolled, Unsafe Fluoridation Products; "Well known in North America as a specialist the courts listen to when citizens challenge their municipal government on the merits of water fluoridation. As of today, they won all their court cases." He also co-authored two papers in the prestigious journal Science and Public Policy titled Fluorides, Water Fluoridation, Cancer, and Genetic Diseases and Fluorides, Water Fluoridation, and Environmental Quality (copies of each available upon request). Dr. Morin is available by phone to answer questions with respect to the safety and effectiveness of artificial water fluoridation as well as questions with respect to the law as it pertains to municipal decisions to fluoridate the water supply.

John Remington Graham. B.A., LL.B.

Phone: (418-888-5049) Email: jrgraham@oricom.ca

Credentials: Mr. Graham is an attorney living in Quebec. He is a co-author of the book Fluoridation: Autopsy of a Scientific Error; He is a member of the Minnesota Bar and has served as a public defender in state and federal courts, a public prosecutor in state courts and a founding professor in an accredited law school in Minnesota. Mr. Graham has practiced before the courts of sixteen jurisdictions in the United States, including **three cases in which the trial judges found that water fluoridation causes cancer** and other ailments in man. He co-authored two papers in the prestigious journal Science and Public Policy titled Fluorides, Water Fluoridation, Cancer, and Genetic Diseases and Fluorides, Water Fluoridation, and Environmental Quality (copies of each attached). Mr. Graham is available by phone or email to answer any questions council members have with respect to the law and pertaining to the link of water fluoridation and cancer.

Carole Clinch, BA BPHE

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Credentials: Carole has filed several petitions to the Auditor General of Canada and published papers with respect to fluoridation. She is available to answer questions with respect to the law and water fluoridation of Windsor, Tecumseh and Lasalle council members by phone, email or Skype. Carole is willing to present in Windsor for the cost of her travel expenses. Carole's fluoride activities are detailed as follows:

Formal Requests for Retraction/Complaint filed with College of Physicians and Surgeons RE False and Misleading Statements with Medical Officers of Health (MOH) & Associate Medical Officers of Health (AMOH): 1. Dr Graham Pollett CPSO #33036 - MOH - London ON 2011 filed Feb 15, 2011; 2. Dr Bryna F. Warshawsky CPSO #56698 - AMOH □ London ON 2011 filed Feb 17, 2011; 3. Dr. George A. Heinman CPSO #60461 - MOH - Windsor-Essex ON filed Nov 23, 2011; 4. Dr. Yves Leger CPSNB #07-03252 - MOH - NB Regions 4,5,6 filed Dec 2011

Petitions to the Auditor General of Canada regarding Health Canada's water fluoridation policies
Petition #221, 221B, 221C, 2210, 221E, 243, 244, 245, 299, 299B, 299C to the Auditor General of Canada available from: http://www.oag-bvg.gc.ca/internet/English/pet_lp_e_938.html

Environmental Bill of Rights (EBR) Application for Review, Petition #07EBR014.R filed Nov 7, 2007 with the Ontario Ministry of the Environment and the Environmental Commissioner of Ontario

Author of complaint to Canadian Food Inspection Agency (CFIA) filed Nov 2010, which ruled in 2011 that health claims by the manufacturer of bottled fluoride water (Nursery Water) are NOT LEGAL.

Clinch CA, Parent G, Morin P 2011 Executive Summary-Law Review submitted to Auditor General of Canada filed May 24, 2011. http://www.newmediaexplorer.org/chris/Canada_Request_for_Audit_2011_Executive_Summary.pdf

4 published papers:

Clinch CA. Fluoride Interactions with Iodine and Iodide: Implications for Breast Health. Fluoride April-June 2009;42(2):75-87.

http://www.fluorideresearch.org/422/files/FJ2009_v42_n2_pOOi-iii.pdf

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http://www.fluorideresearch.org/424/424/files/FI2009_v42_n4_p260-276.pdf

Clinch CA. Does Dental Fluoride Use have Clinically Significant Effects on Oral Bacteria? Fluoride Oct-Dec 2010;43(4):213-22.

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Canadian Association of Physicians for the Environment:

Statement on drinking water fluoridation

The Canadian Association of Physicians for the Environment (CAPE) does not support fluoridation of drinking water for the following reasons.

1) The decline in caries in communities that are fluoridated has been highly significant -- but so has **the decline that has occurred in non-fluoridated communities. There has, in fact, been a general decline in dental caries throughout the Western world, and the decline in fluoridated cities has not exceeded that in non-fluoridated communities. For example, BC drinking water is 95% non-fluoridated, whereas drinking water in Alberta is 75% fluoridated; yet the two provinces have similar rates of caries. Furthermore, Europe is 98% non-fluoridated, but global European dental health is generally equivalent to or better than that in North America. Whatever the reason for the decline in dental caries, it can not be concluded that it is the result of drinking water fluoridation.**

2) **The incidence of toxic effects in humans from fluoridation may well have been underestimated. The most serious potential association is with osteosarcoma in boys, which appears to have been** loosely associated with age of exposure to fluoride. It is true that the CDC has (as has the original researcher) acknowledged that current data are tentative, but a further larger-scale study is pending from the Harvard School of Dentistry. At the very least, such data are grounds for caution.

3) Animal studies have shown a wide range of adverse effects associated with fluoride. It has been **shown to be a potential immunotoxin, embryotoxin, neurotoxin and harmful to bony tissues,** including both dental and ordinary bone. In addition, it can damage (inhibit) thyroid function in **several species, including humans. Its effect on ecosystem balance has been little researched, but is** unlikely to be positive.

4) The intake of fluoride from drinking water is uncontrolled, and can lead to dental fluorosis in children who are inclined to drink large amounts of water. Both natural and artificially fluoridated **water can cause this effect, which is, of course, simply a visible representation of an effect on the entire bony skeleton. The cost of repairing teeth damaged by fluorosis is not trivial; moderate to severe effects can require \$15,000 or more in dental fees.**

It seems clear that a) fluoridation is unlikely to be the cause of the decline in caries in Europe and North America b) **the potential for adverse effects is real, and c) current evidence points in the direction of caution. Over the last decade, recommendations with respect to acceptable fluoride exposure have steadily declined, and cautions have increased. Any dental benefit that may accrue from fluoride exposure is fully achieved by controlled topical application of fluoride compounds by trained dental professionals, not by fluoride ingestion. [The analysis of Dr. Hardy Limeback (www.fluoridealert.org/limeback.htm). Head, Preventive Dentistry, at the University of Toronto(), further clarifies these points.]**

On the basis of this "weight of evidence" we believe that fluoridation of drinking water is Scientifically untenable, and should not be part of a public health initiative or program.

Sep-08

Fluoride Free Windsor

Presentation to Environment and Transportation Standing Committee

Jan25, 2012

Resource List:

Species at Risk Act

http://www.sararegistry.gc.ca/approach/act/sara_e.pdf

Great lakes United: Resolution regarding artificial water fluoridation

<http://www.glu.org/en/node/337>

Turtle Wisdom for a Fast-Paced World: Decision-Making Using Medical Geology and Indigenous Traditional Knowledge

<http://mediaedge.imirus.com/Mpowered/book/vwn2011/i2/p8>

The Canadian Association of Physicians for the Environment (CAPE): Statement on Drinking Water Fluoridation

[http://www.cape.ca/res_cardfile.shtml?cmd\[227\]-i-227-e29cb89dc0610f57e31e5f550b936ed4&cmd\[252j-i-252-e29cb89dc0610f57e31e5f550b936ed4](http://www.cape.ca/res_cardfile.shtml?cmd[227]-i-227-e29cb89dc0610f57e31e5f550b936ed4&cmd[252j-i-252-e29cb89dc0610f57e31e5f550b936ed4)

Canadian Water Quality Guidelines for the Protection of Aquatic Life: Inorganic Fluorides

<http://ceqg-rcqe.ccme.ca/download/en/180/>

Scientific Criteria Document for the Development of the Canadian Water Quality Guidelines for the Protection of Aquatic Life: Uranium

http://www.ccme.ca/assets/pdf/cwqg_uranium_scd_1.0.pdf

Canadian Water Quality Guidelines for the Protection of Aquatic Life: Arsenic

<http://ceqg-rcqe.ccme.ca/download/en/143/>

Canadian Water Quality Guidelines for the Protection of Aquatic Life: Mercury

<http://ceqg-rcqe.ccme.ca/download/en/191/>

The Council of Canadians Launch UnFluoridate It Campaign

<http://canadians.org/water/issues/fluoride/unfluoridate.html>

Fluoride in Drinking Water: A Scientific Review of EPA'S Standards Summary

Summary

Under the Safe Drinking Water Act, the U.S. Environmental Protection Agency (EPA) is required to establish exposure standards for contaminants in public drinking-water systems that might cause any adverse effects on human health. These standards include the maximum contaminant level goal (MCLG), the maximum contaminant level (MCL), and the secondary maximum contaminant level (SMCL). The MCLG is a health goal set at a concentration at which no adverse health effects are expected to occur and the margins of safety are judged "adequate." The MCL is the enforceable standard that is set as close to the MCLG as possible, taking into consideration other factors, such as treatment technology and costs. For some contaminants, EPA also establishes an SMCL, which is a guideline for managing drinking water for aesthetic, cosmetic, or technical effects.

Fluoride is one of the drinking-water contaminants regulated by EPA. In 1986, EPA established an MCLG and MCL for fluoride at a concentration of 4 milligrams per liter (mg/L) and an SMCL of 2 mg/L. These guidelines are restrictions on the total amount of fluoride allowed in drinking water. Because fluoride is well known for its use in the prevention of dental caries, it is important to make the distinction here that EPA's drinking-water guidelines are not recommendations about adding fluoride to drinking water to protect the public from dental caries. Guidelines for that purpose (0.7 to 1.2 mg/L) were established by the U.S. Public Health Service more than 40 years ago. Instead, EPA's guidelines are maximum allowable concentrations in drinking water intended to prevent toxic or other adverse effects that could result from exposure to fluoride.

In the early 1990s at the request of EPA, the National Research Council

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Fluoride in Drinking Water: A Scientific Review of EPA'S Standards Summary
Under the Safe Drinking Water Act, the U.S. Environmental Protection Agency (EPA) is required to establish exposure standards for contaminants in

public drinking-water systems that might cause any adverse effects on human health. These standards include the maximum contaminant level goal (MCLG), the maximum contaminant level (MCL), and the secondary maximum contaminant level (SMCL). The MCLG is a health goal set at a concentration at which no adverse health effects are expected to occur and the margins of safety are judged "adequate." The MCL is the enforceable standard that is set as close to the MCLG as possible, taking into consideration other factors, such as treatment technology and costs. For some contaminants, EPA also establishes an SMCL, which is a guideline for managing drinking water for aesthetic, cosmetic, or technical effects. Fluoride is one of the drinking-water contaminants regulated by EPA. In 1986, EPA established an MCLG and MCL for fluoride at a concentration of 4 milligrams per liter (mg/L) and an SMCL of 2 mg/L. These guidelines are restrictions on the total amount of fluoride allowed in drinking water. Because fluoride is well known for its use in the prevention of dental caries, it is important to make the distinction here that EPA's drinking-water guidelines are not recommendations about adding fluoride to drinking water to protect the public from dental caries. Guidelines for that purpose (0.7 to 1.2 mg/L) were established by the U.S. Public Health Service more than 40 years ago. Instead, EPA's guidelines are maximum allowable concentrations in drinking water intended to prevent toxic or other adverse effects that could result from exposure to fluoride. In the early 1990s at the request of EPA, the National Research Council

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Fluoride in Drinking Water: A Scientific Review of EPA'S Standards (NRC) independently reviewed the health effects of ingested fluoride and the scientific basis for EPA's MCL. It concluded that the MCL was an appropriate interim standard but that further research was needed to fill data gaps on total exposure to fluoride and its toxicity. Because new research on fluoride is now available and because the Safe Drinking Water Act requires periodic reassessment of regulations for drinking-water contaminants, EPA requested that the NRC again evaluate the adequacy of its MCLG and SMCL for fluoride to protect public health. COMMITTEE'S TASK In response to EPA's request, the NRC convened the Committee on Fluoride in Drinking Water, which prepared this report. The committee was charged to review toxicologic, epidemiologic, and clinical data on fluoride- particularly data published since the NRC's previous (1993) report- and exposure data on orally ingested fluoride from drinking water and other sources. On the basis of its review, the committee was asked to evaluate independently the scientific basis of EPA's MCLG of 4 mg/L and SMCL of 2 mg/L in drinking water and the adequacy of those guidelines to protect children and others from adverse health effects. The committee was asked to consider the relative contribution of various fluoride sources (e.g., drinking water, food, dental-hygiene products) to total exposure. The committee was also asked to identify data gaps and to make recommendations for future research relevant to setting

- the MCLG and SMCL for fluoride. Addressing questions of artificial fluoridation, economics, risk-benefit assessment, and water-treatment

technology was not part of the committee's charge. THE COMMITTEE'S EVALUATION To accomplish its task, the committee reviewed a large body of research on fluoride, focusing primarily on studies generated since the early 1990s, including information on exposure; pharmacokinetics; adverse effects on various organ systems; and genotoxic and carcinogenic potential. The collective evidence from in vitro assays, animal research, human studies, and mechanistic information was used to assess whether multiple lines of evidence indicate human health risks. The committee only considered adverse effects that might result from exposure to fluoride; it did not evaluate health risk from lack of exposure to fluoride or fluoride's efficacy in preventing dental caries. After reviewing the collective evidence, including studies conducted since the early 1990s, the committee concluded unanimously that the present MCLG of 4 mg/L for fluoride should be lowered. Exposure at the MCLG clearly puts children at risk of developing severe enamel fluorosis,

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Fluoride in Drinking Water: A Scientific Review of EPA'S Standards a condition that is associated with enamel loss and pitting. In addition, the majority of the committee concluded that the MCLG is not likely to be protective against bone fractures. The basis for these conclusions is expanded upon below. Exposure to Fluoride The major sources of exposure to fluoride are drinking water, food, dental products, and pesticides. The biggest contributor to exposure for most people in the United States is drinking water. Estimates from 1992 indicate that approximately 1.4 million people in the United States had drinking water with natural fluoride concentrations of 2.0-3.9 mg/L, and just over 200,000 people had concentrations equal to or exceeding 4 mg/L (the presented MCL). In 2000, it was estimated that approximately 162 million people had artificially fluoridated water (0.7-1.2 mg/L). Food sources contain various concentrations of fluoride and are the second largest contributor to exposure. Beverages contribute most to estimated fluoride intake, even when excluding contributions from local tap water. The greatest source of nondietary fluoride is dental products, primarily toothpastes. The public is also exposed to fluoride from background air and from certain pesticide residues. Other sources include certain pharmaceuticals and consumer products. Highly exposed subpopulations include individuals who have high concentrations of fluoride in drinking water, who drink unusually large volumes of water, or who are exposed to other important sources of fluoride. Some subpopulations consume much greater quantities of water than the 2 L per day that EPA assumes for adults, including outdoor workers, athletes, and people with certain medical conditions, such as diabetes insipidus. On a per body-weight basis, infants and young children have approximately three to four times greater exposure than do adults. Dental-care products are also a special consideration for children, because many tend to use more toothpaste than is advised, their swallowing control is not as well developed as that of adults, and many children under the care of a dentist undergo fluoride treatments. Overall, the committee found that the contribution to total

fluoride exposure from fluoride in drinking water in the average person, depending on age, is 57% to 90% at 2 mg/L and 72% to 94% at 4 mg/L. For high-water-intake individuals, the drinking-water contribution is 86% to 96% at 2 mg/L and 92% to 98% at 4 mg/L. Among individuals with an average water-intake rate, infants and children have the greatest total exposure to fluoride, ranging from 0.079 to 0.258 mg/kg/day at 4 mg/L and 0.046 to 0.144 mg/kg/day at 2 mg/L in drinking water. For high-water-intake individuals exposed to fluoride at 4 mg/L, total exposure ranges from 0.294

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Fluoride in Drinking Water: A Scientific Review of EPA'S Standards mg/kg/day for adults to 0.634 mg/kg/day for children. The corresponding intake range at 2 mg/L is 0.154 to 0.334 mg/kg/day for adults and children, respectively. Dental Effects Enamel fluorosis is a dose-related mottling of enamel that can range from mild discoloration of the tooth surface to severe staining and pitting. The condition is permanent after it develops in children during tooth formation, a period ranging from birth until about the age of 8. Whether to consider enamel fluorosis, particularly the moderate to severe forms, to be an adverse health effect or a cosmetic effect has been the subject of debate for decades. In previous assessments, all forms of enamel fluorosis, including the severest form, have been judged to be aesthetically displeasing but not adverse to health. This view has been based largely on the absence of direct evidence that severe enamel fluorosis results in tooth loss; loss of tooth function; or psychological, behavioral, or social problems. Severe enamel fluorosis is characterized by dark yellow to brown staining and discrete and confluent pitting, which constitutes enamel loss. The committee finds the rationale for considering severe enamel fluorosis only a cosmetic effect to be much weaker for discrete and confluent pitting than for staining. One of the functions of tooth enamel is to protect the dentin and, ultimately, the pulp from decay and infection. Severe enamel fluorosis compromises that health-protective function by causing structural damage to the tooth. The damage to teeth caused by severe enamel fluorosis is a toxic effect that is consistent with prevailing risk assessment definitions of adverse health effects. This view is supported by the clinical practice of filling enamel pits in patients with severe enamel fluorosis and restoring the affected teeth. Moreover, the plausible hypothesis concerning elevated frequency of caries in persons with severe enamel fluorosis has been accepted by some authorities, and the available evidence is mixed but generally supportive. Severe enamel fluorosis occurs at an appreciable frequency, approximately 10% on average, among children in U.S. communities with water fluoride concentrations at or near the current MCLG of 4 mg/L. Thus, the MCLG is not adequately protective against this condition. Two of the 12 members of the committee did not agree that severe enamel fluorosis should now be considered an adverse health effect. They agreed that it is an adverse dental effect but found that no new evidence has emerged to suggest a link between severe enamel fluorosis, as experienced in the United States, and a person's ability to function. They judged that demonstration of enamel defects alone from fluorosis is not sufficient to change the prevailing opinion that severe enamel

fluorosis is an adverse cosmetic effect. Despite their disagreement on characterization of the condition, these

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Fluoride in Drinking Water: A Scientific Review of EPA'S Standards two members concurred with the committee's conclusion that the MCLG should prevent the occurrence of this unwanted condition. Enamel fluorosis is also of concern from an aesthetic standpoint because it discolors or results in staining of teeth. No data indicate that staining alone affects tooth function or susceptibility to caries, but a few studies have shown that tooth mottling affects aesthetic perception of facial attractiveness. It is difficult to draw conclusions from these studies, largely because perception of the condition and facial attractiveness are subjective and culturally influenced. The committee finds that it is reasonable to assume that some individuals will find moderate enamel fluorosis on front teeth to be detrimental to their appearance and that it could affect their overall sense of well-being. However, the available data are not adequate to categorize moderate enamel fluorosis as an adverse health effect on the basis of structural or psychological effects. Since 1993, there have been no new studies of enamel fluorosis in U.S. communities with fluoride at 2 mg/L in drinking water. Earlier studies indicated that the prevalence of moderate enamel fluorosis at that concentration could be as high as 15%. Because enamel fluorosis has different distribution patterns among teeth, depending on when exposure occurred during tooth development and on enamel thickness, and because current indexes for categorizing enamel fluorosis do not differentiate between mottling of anterior and posterior teeth, the committee was not able to determine what percentage of moderate cases might be of cosmetic concern.

Musculoskeletal Effects Concerns about fluoride's effects on the musculoskeletal system historically have been and continue to be focused on skeletal fluorosis and bone fracture. Fluoride is readily incorporated into the crystalline structure of bone and will accumulate over time. Since the previous 1993 NRC review of fluoride, two pharmacokinetic models were developed to predict bone concentrations from chronic exposure to fluoride. Predictions based on these models were used in the committee's assessments below.

Skeletal Fluorosis Skeletal fluorosis is a bone and joint condition associated with prolonged exposure to high concentrations of fluoride. Fluoride increases bone density and appears to exacerbate the growth of osteophytes present in the bone and joints, resulting in joint stiffness and pain. The condition is categorized into one of four stages: a preclinical stage and three clinical stages that increase in severity. The most severe stage (clinical stage III) historically has been referred to as the "crippling" stage. At stage II, mobility is not significantly

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Fluoride in Drinking Water: A Scientific Review of EPA'S Standards affected, but it is characterized by chronic joint pain, arthritic symptoms, slight calcification of ligaments, and osteosclerosis of the cancellous bones. Whether EPA's MCLG of 4 mg/L protects against these precursors to more

serious mobility problems is unclear. Few clinical cases of skeletal fluorosis in healthy U.S. populations have been reported in recent decades, and the committee did not find any recent studies to evaluate the prevalence of the condition in populations exposed to fluoride at the MCLG. Thus, to answer the question of whether EPA's MCLG protects the general public from stage II and stage III skeletal fluorosis, the committee compared pharmacokinetic model predictions of bone fluoride concentrations and historical data on iliac crest bone fluoride concentrations associated with the different stages of skeletal fluorosis. The models estimated that bone fluoride concentrations resulting from lifetime exposure to fluoride in drinking water at 2 mg/L (4,000 to 5,000 mg/kg ash) or 4 mg/L (10,000 to 12,000 mg/kg ash) fall within or exceed the ranges historically associated with stage II and stage III skeletal fluorosis (4,300 to 9,200 mg/kg ash and 4,200 to 12,700 mg/kg ash, respectively). However, this comparison alone is insufficient for determining whether stage II or III skeletal fluorosis is a risk for populations exposed to fluoride at 4 mg/L, because bone fluoride concentrations and the levels at which skeletal fluorosis occurs vary widely. On the basis of the existing epidemiologic literature, stage III skeletal fluorosis appears to be a rare condition in the United States; furthermore, the committee could not determine whether stage II skeletal fluorosis is occurring in U.S. residents who drink water with fluoride at 4 mg/L. Thus, more research is needed to clarify the relationship between fluoride ingestion, fluoride concentrations in bone, and stage of skeletal fluorosis before any conclusions can be drawn.

Bone Fractures Several epidemiologic studies of fluoride and bone fractures have been published since the 1993 NRC review. The committee focused its review on observational studies of populations exposed to drinking water containing fluoride at 2 to 4 mg/L or greater and on clinical trials of fluoride (20-34 mg/day) as a treatment for osteoporosis. Several strong observational studies indicated an increased risk of bone fracture in populations exposed to fluoride at 4 mg/L, and the results of other studies were qualitatively consistent with that finding. The one study using serum fluoride concentrations found no appreciable relationship to fractures. Because serum fluoride concentrations may not be a good measure of bone fluoride concentrations or long-term exposure, the ability to show an association might have been diminished in that study. A meta-analysis of randomized clinical trials reported an elevated risk of new nonvertebral fractures and a slightly decreased risk of vertebral

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Fluoride in Drinking Water: A Scientific Review of EPA'S Standards fractures after 4 years of fluoride treatment. An increased risk of bone fracture was found among a subset of the trials that the committee found most informative for assessing long-term exposure. Although the duration and concentrations of exposure to fluoride differed between the observational studies and the clinical trials, bone fluoride content was similar (6,200 to more than 11,000 mg/kg ash in observational studies and 5,400 to 12,000 mg/kg ash in clinical trials). Fracture risk and bone strength have been studied in animal models. The weight of evidence indicates that, although

fluoride might increase bone volume, there is less strength per unit volume. Studies of rats indicate that bone strength begins to decline when fluoride in bone ash reaches 6,000 to 7,000 mg/kg. However, more research is needed to address uncertainties associated with extrapolating data on bone strength and fractures from animals to humans. Important species differences in fluoride uptake, bone remodeling, and growth must be considered. Biochemical and physiological data indicate a biologically plausible mechanism by which fluoride could weaken bone. In this case, the physiological effect of fluoride on bone quality and risk of fracture observed in animal studies is consistent with the human evidence. Overall, there was consensus among the committee that there is scientific evidence that under certain conditions fluoride can weaken bone and increase the risk of fractures. The majority of the committee concluded that lifetime exposure to fluoride at drinking-water concentrations of 4 mg/L or higher is likely to increase fracture rates in the population, compared with exposure to 1 mg/L, particularly in some demographic subgroups that are prone to accumulate fluoride into their bones (e.g., people with renal disease). However, 3 of the 12 members judged that the evidence only supports a conclusion that the MCLG might not be protective against bone fracture. Those members judged that more evidence is needed to conclude that bone fractures occur at an appreciable frequency in human populations exposed to fluoride at 4 mg/L and that the MCLG is not likely to be protective. There were few studies to assess fracture risk in populations exposed to fluoride at 2 mg/L in drinking water. The best available study, from Finland, suggested an increased rate of hip fracture in populations exposed to fluoride at concentrations *above* 1.5 mg/L. However, this study alone is not sufficient to judge fracture risk for people exposed to fluoride at 2 mg/L. Thus, no conclusions could be drawn about fracture risk or safety at 2 mg/L. Reproductive and Developmental Effects A large number of reproductive and developmental studies in animals have been conducted and published since the 1993 NRC report, and the

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Fluoride in Drinking Water: A Scientific Review of EPA'S Standards overall quality of that database has improved significantly. Those studies indicated that adverse reproductive and developmental outcomes occur only at *very* high concentrations that are unlikely to be encountered by U.S. populations. A few human studies suggested that high concentrations of fluoride exposure might be associated with alterations in reproductive hormones, effects on fertility, and developmental outcomes, but design limitations make those studies insufficient for risk evaluation. Neurotoxicity and Neurobehavioral Effects Animal and human studies of fluoride have been published reporting adverse cognitive and behavioral effects. A few epidemiologic studies of Chinese populations have reported IQ deficits in children exposed to fluoride at 2.5 to 4 mg/L in drinking water. Although the studies lacked sufficient detail for the committee to fully assess their quality and relevance to U.S. populations, the consistency of the results appears significant enough to warrant additional research on the effects of fluoride on intelligence. A few animal studies have reported alterations in the behavior of rodents after

treatment with fluoride, but the committee did not find the changes to be substantial in magnitude. More compelling were studies on molecular, cellular, and anatomical changes in the nervous system found after fluoride exposure, suggesting that functional changes could occur. These changes might be subtle or seen only under certain physiological or environmental conditions. More research is needed to clarify the effect of fluoride on brain chemistry and function.

Endocrine Effects The chief endocrine effects of fluoride exposures in experimental animals and in humans include decreased thyroid function, increased calcitonin activity, increased parathyroid hormone activity, secondary hyperparathyroidism, impaired glucose tolerance, and possible effects on timing of sexual maturity. Some of these effects are associated with fluoride intake that is achievable at fluoride concentrations in drinking water of 4 mg/L or less, especially for young children or for individuals with high water intake. Many of the effects could be considered subclinical effects, meaning that they are not adverse health effects. However, recent work on borderline hormonal imbalances and endocrine-disrupting chemicals indicated that adverse health effects, or increased risks for developing adverse effects, might be associated with seemingly mild imbalances or perturbations in hormone concentrations. Further research is needed to explore these possibilities.

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Fluoride in Drinking Water: A Scientific Review of EPA'S Standards Effects on Other Organ Systems The committee also considered effects on the gastrointestinal system, kidneys, liver, and immune system. There were no human studies on drinking water containing fluoride at 4 mg/L in which gastrointestinal, renal, hepatic, or immune effects were carefully documented. Case reports and in vitro and animal studies indicated that exposure to fluoride at concentrations greater than 4 mg/L can be irritating to the gastrointestinal system, affect renal tissues and function, and alter hepatic and immunologic parameters. Such effects are unlikely to be a risk for the average individual exposed to fluoride at 4 mg/L in drinking water. However, a potentially susceptible subpopulation comprises individuals with renal impairments who retain more fluoride than healthy people do.

Genotoxicity and Carcinogenicity Many assays have been performed to assess the genotoxicity of fluoride. Since the 1993 NRC review, the most significant additions to the database are in vivo assays in human populations and, to a lesser extent, in vitro assays with human cell lines and in vivo experiments with rodents. The results of the in vivo human studies are mixed. The results of in vitro tests are also conflicting and do not contribute significantly to the interpretation of the existing database. Evidence on the cytogenetic effects of fluoride at environmental concentrations is contradictory. Whether fluoride might be associated with bone cancer has been a subject of debate. Bone is the most plausible site for cancer associated with fluoride because of its deposition into bone and its mitogenic effects on bone cells in culture. In a 1990 cancer bioassay, the overall incidence of osteosarcoma in male rats exposed to different amounts of fluoride in drinking water showed a positive dose-response trend. In a 1992

study, no increase in osteosarcoma was reported in male rats, but most of the committee judged the study to have insufficient power to counter the evidence for the trend found in the 1990 bioassay. Several epidemiologic investigations of the relation between fluoride and cancer have been performed since the 1993 evaluation, including both individual-based and ecologic studies. Several studies had significant methodological limitations that made it difficult to draw conclusions. Overall, the results are mixed, with some studies reporting a positive association and others no association. On the basis of the committee's collective consideration of data from humans, genotoxicity assays, and studies of mechanisms of action in cell systems (e.g., bone cells in vitro), the evidence on the potential of fluoride to initiate or promote cancers, particularly of the bone, is tentative and

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Fluoride in Drinking Water: A Scientific Review of EPA'S Standards mixed. Assessing whether fluoride constitutes a risk factor for osteosarcoma is complicated by the rarity of the disease and the difficulty of characterizing biologic dose because of the ubiquity of population exposure to fluoride and the difficulty of acquiring bone samples in nonaffected individuals. A relatively large hospital-based case-control study of osteosarcoma and fluoride exposure is under way at the Harvard School of Dental Medicine and is expected to be published in 2006. That study will be an important addition to the fluoride database, because it will have exposure information on residence histories, water consumption, and assays of bone and toenails. The results of that study should help to identify what future research will be most useful in elucidating fluoride's carcinogenic potential. DRINKING-WATER STANDARDS Maximum-Contaminant-Level Goal In light of the collective evidence on various health end points and total exposure to fluoride, the committee concludes that EPA's MCLG of 4 mg/L should be lowered. Lowering the MCLG will prevent children from developing severe enamel fluorosis and will reduce the lifetime accumulation of fluoride into bone that the majority of the committee concludes is likely to put individuals at increased risk of bone fracture and possibly skeletal fluorosis, which are particular concerns for subpopulations that are prone to accumulating fluoride in their bones. To develop an MCLG that is protective against severe enamel fluorosis, clinical stage II skeletal fluorosis, and bone fractures, EPA should update the risk assessment of fluoride to include new data on health risks and better estimates of total exposure (relative source contribution) for individuals. EPA should use current approaches for quantifying risk, considering susceptible subpopulations, and characterizing uncertainties and variability. Secondary Maximum Contaminant Level The prevalence of severe enamel fluorosis is very low (near zero) at fluoride concentrations below 2 mg/L. From a cosmetic standpoint, the SMCL does not completely prevent the occurrence of moderate enamel fluorosis. EPA has indicated that the SMCL was intended to reduce the severity and occurrence of the condition to 15% or less of the exposed population. The available data indicate that fewer than 15% of children will experience moderate enamel fluorosis of aesthetic concern (discoloration of the front teeth) at that concentration. However, the

degree to which moderate enamel fluorosis might go beyond a cosmetic effect to create an adverse psychological effect or an adverse effect on social functioning is not known.

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Fluoride in Drinking Water: A Scientific Review of EPA'S Standards OTHER PUBLIC HEALTH ISSUES The committee's conclusions regarding the potential for adverse effects from fluoride at 2 to 4 mg/L in drinking water do not address the lower exposures commonly experienced by most U.S. citizens. Fluoridation is widely practiced in the United States to protect against the development of dental caries; fluoride is added to public water supplies at 0.7 to 1.2 mg/L. The charge to the committee did not include an examination of the benefits and risks that might occur at these lower concentrations of fluoride in drinking water. RESEARCH NEEDS As noted above, gaps in the information on fluoride prevented the committee from making some judgments about the safety or the risks of fluoride at concentrations of 2 to 4 mg/L. The following research will be useful for filling those gaps and guiding revisions to the MCLG and SMCL for fluoride. Exposure assessment Improved assessment of exposure to fluoride from all sources is needed for a variety of populations (e.g., different socioeconomic conditions). To the extent possible, exposures should be characterized for individuals rather than communities, and epidemiologic studies should group individuals by exposure level rather than by source of exposure, location of residence, or fluoride concentration in drinking water. Intakes or exposures should be characterized with and without normalization for body weight. Fluoride should be included in nationwide biomonitoring surveys and nutritional studies; in particular, analysis of fluoride in blood and urine samples taken in these surveys would be valuable. Pharmacokinetic studies The concentrations of fluoride in human bone as a function of exposure concentration, exposure duration, age, sex, and health status should be studied. Such studies would be greatly aided by noninvasive means of measuring bone fluoride. Information is particularly needed on fluoride plasma and bone concentrations in people with small-to-moderate changes in renal function as well as in those with serious renal deficiency. Improved and readily available pharmacokinetic models should be developed. Additional cross-species pharmacokinetic comparisons would help to validate such models. Studies of enamel fluorosis Additional studies, including longitudinal studies, should be done in U.S. communities with water fluoride concentrations greater than 1 mg/L.

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Fluoride in Drinking Water: A Scientific Review of EPA'S Standards These studies should focus on moderate and severe enamel fluorosis in relation to caries and in relation to psychological, behavioral, and social effects among affected children, their parents, and affected children after they become adults. Methods should be developed and validated to objectively assess enamel fluorosis. Consideration should be given to distinguishing between staining or mottling of the anterior teeth and of the posterior teeth so that aesthetic consequences can be more easily assessed. More research is

needed on the relation between fluoride exposure and dentin fluorosis and delayed tooth eruption patterns. Bone studies A systematic study of clinical stage II and stage III skeletal fluorosis should be conducted to clarify the relationship between fluoride ingestion, fluoride concentration in bone, and clinical symptoms. More studies of communities with drinking water containing fluoride at 2 **mg/L** or more are needed to assess potential bone fracture risk at these higher concentrations. Quantitative measures of fracture, such as radiologic assessment of vertebral body collapse, should be used instead of self-reported fractures or hospital records. Moreover, if possible, bone fluoride concentrations should be measured in long-term residents. Other health effects Carefully conducted studies of exposure to fluoride and emerging health parameters of interest (e.g., endocrine effects and brain function) should be performed in populations in the United States exposed to various concentrations of fluoride. It is important that exposures be appropriately documented.

From: Aliss [mailto:aliss@thomaidis.com]
Sent: March 11, 2012 10:54 AM
To: clerks
Cc: fluoridewindsor@hotmail.com
Subject: Please distribute to councillors (fluoridation issue)

MAR 19 2012
ADDITIONAL INFORMATION
REPORT to Jo. If5
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-rRANSi'ORTAT.o,-.l srMP¹¹¹¹
COMM 1...-rE.l:..

Dear Clerk of Windsor City Council,

Would you please distribute my personal account, below, to all the Councillors and the Mayor?

Thank you.

Aliss Terpstra,
32 Inniswood Drive, Toronto M1R 1E5
416-757-5933
Email: aliss@thomaidis.com

To the Council, City of Windsor, Ontario:

I used to believe in fluoridation, until I discovered that most of my health and dental problems were caused by it. I am involved in the democratic process to end water fluoridation as a founding member of Canadians Opposed to Fluoridation <http://cof-cof.ca> Donna Jean Mayne and Kimberly DeYong from the group fluoride Free Windsor have asked me to write you with my personal story.

You are told that early studies proved fluoridation reduces cavities without any harm. It is not true.

I am one of the thousands of guinea pig children from the Grand Rapids, Michigan fluoridation experiment who has been harmed but got no dental benefit. All artificial fluoridation, including the current fluoridation of Windsor, is done by "expert advisors" continuing to misrepresent to elected councillors like yourselves the actual results of the fluoridation trials on real children like me. When you, as elected councillors, follow unverified advice to fluoridate without performing due diligence on our behalf, democracy is misused. The effect is to deny the harm done sixty five years ago to the bodies of innocent children whose parents could not give informed consent. In denying the harm done to us, the harm to today's children continues unopposed. You now have the opportunity to stop it.

I was born 1952 in the cohort 1948-55 after Grand Rapids (like Brantford) had switched from using expensive sodium fluoride from Alcoa to the more toxic and contaminated but much cheaper silicofluorides from phosphate industry. Our cohort was supposed to be followed up to age 16, but we were dropped when we turned out to be more likely to be born early and small and have dental fluorosis and more tooth decay by age 6 than the kids born before fluoridation. The Brantford, Ontario cohort was not followed up at all. A Freedom of Information Access request filed under the Ontario MFIPPA in 2009 by founding members of Canadians Opposed to Fluoridation proved this. Fluoridation is based on reports of a successful outcome that does not exist. A lie.

I also lived from age 8 to 15 in one of Ontario's towns (Listowel) with natural high fluoride levels (above 1.5 ppm) in the water, but like my siblings and many of my classmates I continued to get cavities. At school, gastric distress after drinking from the fountain at recess was common. Dental fluorosis, enlarged neck (goiter from thyroid suppression by fluoride), and delayed eruption of teeth with no room for canines ("eye" teeth) are evident in our school pictures. Yet your expert advisors say that natural fluoridation is harmless and proves artificial fluoridation at lower level is safe and effective.

I had poor dental health: many amalgam fillings, crowded overbite and six extracted teeth by age thirteen; a mouth full of stainless steel orthodontics until age seventeen with ongoing cavities despite drinking fluoridated water, getting annual fluoride treatment, and brushing religiously. The physical evidence is undeniable that my bones have been weakened and accumulated too much fluoride in childhood from drinking water- nottoothpaste. I had chronic fluoride poisoning symptoms and signs by age twelve, misdiagnosed as arthritis and was misdiagnosed with diabetes insipidus at age 21, all based on the lie told to doctors that "fluoride is harmless". I was diagnosed with hypothyroidism (and told I would need thyroid drugs for life)- butwhen I carefully avoided fluoridated water my thyroid recovered and I no longer needed medication.

My bones, kidneys, liver and heart have been affected by cumulative chronic fluoride poisoning. Like 30% of older adults who were conceived on fluoridated water I am now hypersensitive to low exposures. I cannot drink fluoridated Toronto tap water or eat food cooked in it. Neither can my children. This is not a rarity but a predictable result of fluoridation warned of by ethical researchers in North America from the beginning and documented since then by scientists in other countries such as the Netherlands that do not fluoridate and do not censor research into harmful effects. I suffer reproducible symptoms from any fluoride exposure whether from air pollution, water, tea, beverages, food, dental care or medicines (many OTC and Rx drugs, such as asthma inhalers, arthritis and cancer drugs deliver significant doses of fluoride). I am now at risk of heart and kidney failure from general anesthesia because my overloaded system cannot excrete the large dose of fluoride it releases.

Table salt provides one milligram of fluoride per teaspoon; a mug of tea can provide two milligrams. A Tim Horton's muffin gives you half a milligram. Extruded breakfast cereals are loaded with fluoride. So is bottled fruit juice. Consuming these fluoride-rich things does not prevent tooth decay. Taking fluoride pills and swallowing toothpaste doesn't either. How then does consuming industrial waste in water prevent it?

Fluoride is cumulative in the body and biologically toxic; and hydrofluorosilicic acid used in fluoridation is particularly so. But maintaining fluoridation is done through authoritarian paternalism with repeated denial of basic science facts and blatant reversal of the evidence. The hazardous industrial pollutant regulated by Environment Canada is being called "natural" and "a nutrient" by publicly paid but unelected and unaccountable officials, with collusion by our provincial and federal ministers of health, to pressure councils into maintaining the policy. But it is you, not they, who are legally liable for the decision to add contaminants to public drinking water that are infractions of the Safe Drinking Water Act!

Why or how could otherwise compassionate and intelligent councillors such as yourselves, most who are parents or grandparents of children with dental fluorosis, continue to overlook our suffering and allow the continued denial of the law, science and evidence of harm, except through paternalistic and authoritarian imposition of government dental propaganda that lacks any logic? So, stop pretending there is no elephant in the council chamber! If you put industrial toxic waste fluoride in the air, people and animals breathing it at more than 0.05 ppm for even one hour get sick. If you put it into rivers and lakes at more than 0.12 ppm you harm hatching fish and water fleas. Accordingly, the federal and provincial environment laws and guidelines forbid this. But the same officials tell you that if you put it in drinking water at 0.7 ppm, it's magic tooth medicine, safe for kittens and babies for life? Call them on it!

Please put an end to "rule by authoritarian paternalism" and revive the spirit of responsive and accountable municipal democracy that respects the impartial rule of law. I have no doubt that this is why you ran for office in the first place. Vote to uphold the Ontario Safe Drinking Water Act. Vote to stop fluoridating.

Sincerely,

Aliss Terpstra

32 Inniswood Drive Toronto M1R 1E5

416-757-5933

"Logic and experience are the sole basis for all genuine science."

Safe Drinking Water and Standard of Care

A backgrounder for municipal officials on the Safe Drinking Water Act, 2002 and Section 19, Statutory Standard of Care

Safe drinking water is essential to public health. Accordingly, the people of Ontario expect that the quality of the water that comes from their taps is safe for human consumption.

As part of Ontario's commitment to safeguard drinking water, the Ontario government recently enacted section 19 of the *Safe Drinking Water Act, 2002* (SDWA). Section 19 sets out the legal responsibilities and duties of persons who oversee municipal drinking water systems.

As a municipal official or a corporate officer, it is important that you understand these legal duties and responsibilities, commonly described as statutory Standard of Care.

This fact sheet provides basic information about the purpose and application of section 19 and is intended to help you better understand your duties and responsibilities. To fully understand your legal obligations under section 19, it is recommended you seek legal advice.

Safe Drinking Water Act, 2002

The SDWA is part of a comprehensive legislative framework established by the Ontario government to protect the safety and quality of Ontario's drinking water. This framework has been enacted to safeguard water quality from the raw water source through to treatment and distribution.

The SDWA regulates the treatment and distribution of drinking water. The primary purpose of the SDWA is to provide for the protection of human health and the prevention of drinking water hazards through the control and regulation of drinking water systems and the testing of drinking water.

Regulations under the SDWA stipulate the detailed requirements for drinking water systems, testing services, quality standards, certification of drinking water system operators and drinking water quality analysts, as well as compliance and enforcement.

Section 19, Statutory Standard of Care

Section 19 of the SDWA was proclaimed in May 2007 and will come into force on January 1, 2013. This section requires that those who are in a position of oversight of municipal drinking water systems apply a statutory standard of care to their oversight activities. Specifically, section 19 applies to the owner of the system:

- where the system is owned by a corporation that is not a municipality
 - every officer and director of that corporation
- where the system is owned by a municipality
 - every person who oversees the accredited operating authority for the system, and
 - every person who exercises decision making authority over the system.

Anyone to whom the standard of care applies is expected to exercise the level of care, diligence and skill in respect of a municipal drinking water system that a reasonably prudent person would be expected to exercise in a similar situation. They also must act honestly, competently and with integrity, with a view to ensuring the protection and safety of the users of the municipal drinking water system.

The section does not require that everyone involved in the oversight of drinking water systems be an expert. However, it is expected that everyone inform themselves appropriately of their responsibilities. It is also expected that everyone be diligent about their oversight responsibilities. Part of this diligence includes engaging, as appropriate, persons who have the particular expertise in the various aspects of owning and operating drinking water systems. In fact, the SDWA recognizes this need to rely on experts. Section 19 of the SDWA allows for any person subject to the standard of care, to rely in good faith on a report of an engineer, lawyer, accountant or other person whose professional qualifications lend credibility to the report.

Who is subject to Section 19 of the SDWA?

Section 19 of the SDWA expressly extends regulatory responsibility to people with decision making authority over the drinking water system. Depending on specific circumstances and individual responsibilities, this responsibility may extend to individual municipal councillors and other municipal officials and employees.

There are many variations on how drinking water systems are managed by municipalities. Determining to whom the standard of care applies within each municipality, and determining how that standard of care is met must be assessed on a case-by-case basis. To determine who is subject to the standard of care in cases where the municipal drinking water system is owned by a municipality, you should consider issues/questions such as the following:

- who within the organizational structure has decision-making authority over the municipal drinking water system?
- who is responsible for:
 - adopting an overall policy for the system?
 - hiring senior management and conducting regular performance appraisals, or contracting with an external operating authority?
 - asking for and receiving periodic and annual reports from senior management on the operation of the municipal drinking water system?
 - auditing and evaluating the performance of the operating authority?

Fulfilling Section 19, Standard of Care

The SDWA includes enforcement and compliance measures to assist in the delivery of safe drinking water to the people of Ontario.

Delivering safe, quality drinking water to the people of Ontario is serious business and there are serious consequences for non-compliance with the SDWA and section 19. That is why we strongly recommend your municipality consider where it would be appropriate to engage people with expertise in drinking water systems to provide advice or answer questions. It will help to protect you, your municipality and the people of your municipality who rely on your due diligence for safe drinking water and their health.

Failure to comply with section 19 of the SDWA is an offence and could result in the prosecution of an individual, a corporation, or both.

A conviction under section 19 could result in significant financial penalties and/or imprisonment. The maximum fine for an individual convicted of a first offence under the section is \$20,000 for each day or part of a day that the offence occurred, imprisonment, or both. If a breach of section 19 resulted in a drinking water health hazard or other severe consequences, the fine could be

as high as \$4 million for each day or part of a day that the offence occurred, imprisonment, or both. Significantly greater fines could result on subsequent convictions. Fines for corporations are significantly greater.

Actual penalties would be decided by the courts and would depend on the severity and consequences of the offence.'

What can you do to better meet your Standard of Care responsibilities?

Get informed and stay informed.

Being informed and demonstrating diligent oversight requires knowledge of some basic principles of operation, administration and financial planning so that you understand the characteristics of the drinking water system or systems you oversee.

Actions that municipal officials with oversight for drinking water systems should take include:

- being acquainted with drinking water legislation and regulations
- learning about drinking water safety and the operation of water works facilities
- familiarizing themselves with their municipal drinking water systems and their approvals
- setting the overall policy direction for the municipal drinking water system
- clearly defining and understanding the roles and responsibilities of councillors, senior management and other municipal or corporate officials who exercise decision-making authority over the drinking water system
- hiring competent senior management and conducting regular performance appraisals
- asking for and receiving periodic and annual reports from senior management on the operation of the municipal drinking water system
- periodically auditing or evaluating the performance of the external operating authority if one has been contracted to run the drinking water system
- reading and asking questions about any reports which identify declining drinking water quality
- being satisfied that appropriate steps are taken to address any issues
- seeking outside expertise when needed.

The Municipal Drinking Water Licensing Program and Standard of Care

The Ministry of the Environment has introduced the Municipal Drinking Water Licensing Program that, when fully implemented by 2013, will assist owners and operators of municipal residential drinking water systems in meeting the statutory standard of care.

The program includes a number of requirements to assist owners and operators to retain and acquire the appropriate knowledge and expertise to develop and implement appropriate management and controls over drinking water systems. To obtain a license, owners will be required to:

- have an accredited operating authority
- develop a quality management system (QMS) in conjunction with the operating authority and ensure adequate resources are available for its implementation
- implement the QMS through a ministry accepted operational plan, and
- prepare and approve a financial plan for the system.

One of these requirements, the operational plan component, for example, will include:

- a policy that will commit the owner and operator of the drinking water system or systems to providing safe drinking water and to complying with applicable legislation and regulations
- key information about every residential drinking water system owned by a municipality
- a process for risk assessment that is required to be completed and/or reviewed at least once every 36 months
- a description of organizational structures including roles, responsibilities and authorities for both the owner and operating authority
- a procedure for an annual review of the adequacy of the infrastructure needed to operate and maintain the drinking water system and a commitment for the operating authority to communicate the findings of the review to the owner
- a procedure for sharing sampling, testing and monitoring reports between the owner and operating authority about the safety of your municipality's drinking water
- an outline of responsibilities of the owner and the operating authority of the drinking water system during emergency situations

- a commitment to continual improvement through corrective actions
- a procedure for conducting a management review at least once every 12 months that evaluates the continuing suitability, adequacy and effectiveness of the QMS and to report the results of this review, including identified deficiencies, decisions and action items.

For more information:

The information contained here is intended to give general information only and must be read in conjunction with the legislation and regulations that outline specific requirements and procedures.

For further information about the *Safe Drinking Water Act, 2002* and its supporting regulations, visit the Ministry of the Environment's web site at www.ene.gov.on.ca or *Drinking Water Ontario* at www.ontario.ca/drinkingwater, e-Laws at www.e-laws.gov.on.ca or by calling the Ministry's Public Information Centre at 1-800-565-4923.

¹For more information on the fines and terms of imprisonment, refer to Part XI-Offences, of the *Safe Drinking Water Act, 2002, c.32*.

Great Lakes United

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Union St-Laurent Garablas

An international coalition to protect and restore
the-Great Lakes and St. Lawrence River

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Toronto 120-215 Spadina Avenue | Toronto, Ontario | M5T20
Montreal 3388 Adam Street | Montreal, Quebec | H1W 1Y1

March-19, 2012
Additional Information
RE: Report No. 45 of the
Environment and Transportation
Standing Committee

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Resolution regarding artificial water fluoridation

Whereas the Basel Convention, Environment Canada and United States Environmental Protection Agency (US EPA) all state that the chemicals used in artificial water fluoridation are hazardous waste which may not be put directly into lakes, rivers and oceans; and,

Whereas artificial water fluoridation chemicals contain between 20 to 30% hydrofluorosilicic acid (inorganic fluoride), trace amounts of arsenic, lead, mercury, radionuclides and other heavy metals, all considered to be toxic substances under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Priority List of Hazardous Substances in USA, 1989 First Priority Substances lists in Canada and proposed for "virtual elimination" under the Canadian Environmental Protection Act, the 1997 Binational Toxic Strategy and the 1978 Great Lakes Water Quality Agreement; and,

Whereas fluoride is not removed in sewage treatment and remains a toxic constituent of the effluent discharged by treatment plants to rivers and lakes; and,

Whereas background levels of fluoride in the Great Lakes exceed the Canadian Water Quality Guideline (CWQG) and fluoride concentrations in sewage effluent are 5-10 times in excess of the CWQG. At these concentrations fluoride is known to be toxic to a variety of water species such as salmon, caddisfly, daphnia magna & others; and,

Whereas the US EPA labor unions, the Canadian Association of Physicians for the Environment (CAPE), and professionals world-wide state that artificial water fluoridation is not effective in the prevention of cavities and not safe to vulnerable populations, as demonstrated in the recent US National Research Council 2006 Review; and,

Whereas there is a wide range of health vulnerabilities in a population and a wide range of consumption patterns for fluoridated water and beverages and foods made with fluoridated water, which means that an individual's daily dose of fluoride chemicals from drinking water cannot be controlled;

.Whereas imposing chemicals used as a medication to a population without a prescription or their informed consent is unacceptable; and,

Whereas less than one percent of treated water is actually ingested by the body and the remaining 9< percent put into the environment; and,

Therefore be it resolved that Great Lakes United supports statements by the United States Environmental Protection Agency labor unions, Canadian Association of Physicians for the Environment (CAPE), and professionals worldwide that the practice of artificial drinking water fluoridation be **terminated; and,**

Therefore be it further resolved that Great Lakes United works to reverse existing government policies supporting artificial drinking water fluoridation;

Therefore be it further resolved that Great Lakes United supports government policies, practices and regulations which do not permit drinking water to be used as a means of delivery for chemicals or drugs intended to treat humans - for example, the chemical called hydrofluorosilicic acid, used to deliver fluorides;

Therefore be it further resolved that Great Lakes United supports government policies, practices and regulations requiring fluoride polluting industries to dispose of this hazardous waste in a safe, sustainable manner which does not harm our ecosystem;

Therefore be it further resolved that Great Lakes United communicates accurate information regarding the safety and efficacy of these artificial fluoridation chemicals to municipal associations (such as the Federation of Canadian Municipalities), the Great Lakes-St. Lawrence Cities Initiative, First Nations and Tribal Governments who are attempting to make informed decisions on this issue;

Therefore be it further resolved that Great Lakes United makes their position known to provincial, state and federal governments.

I hereby certify that this is a true copy of a resolution adopted at the twenty-seventh annual meeting of Great Lakes United on May 20, 2009.

Julie O'Leary
President

Canadian Association of Physicians for the Environment

130 Spadina Avenue, Suite 301 Toronto, ON MSV 2L4

Tel: 416-306-2273 Fax: 416-960-9392 www.cape.ca

Statement on drinking water fluoridation

The Canadian Association of Physicians for the Environment (CAPE) does not support fluoridation of drinking water for the following reasons.

1) The decline in caries in communities that are fluoridated has been highly significant -- but so has the decline that has occurred in non-fluoridated communities. There has, in fact, been a general decline in dental caries throughout the Western world, and the decline in fluoridated cities has not exceeded that in non-fluoridated communities. For example, BC drinking water is 95% non-fluoridated, whereas drinking water in Alberta is 75% fluoridated; yet the two provinces have similar rates of caries. Furthermore, Europe is 98% non-fluoridated, but global European dental health is generally equivalent to or better than that in North America. Whatever the reason for the decline in dental caries, it can not be concluded that it is the result of drinking water fluoridation.

2) The incidence of toxic effects in humans from fluoridation may well have been underestimated. The most serious potential association is with osteosarcoma in boys, which appears to have been loosely associated with age of exposure to fluoride. It is true that the CDC has (as has the original researcher) acknowledged that current data are tentative, but a further larger-scale study is pending from the Harvard School of Dentistry. At the very least, such data are grounds for caution.

3) Animal studies have shown a wide range of adverse effects associated with fluoride. It has been shown to be a potential immunotoxin, embryotoxin, neurotoxin and harmful to bony tissues, including both dental and ordinary bone. In addition, it can damage (inhibit) thyroid function in several species, including humans. Its effect on ecosystem balance has been little researched, but is unlikely to be positive.

4) The intake of fluoride from drinking water is uncontrolled, and can lead to dental fluorosis in children who are inclined to drink large amounts of water. Both natural and artificially fluoridated water can cause this effect, which is, of course, simply a visible representation of an effect on the entire bony skeleton. The cost of repairing teeth damaged by fluorosis is not trivial; moderate to severe effects can require \$15,000 or more in dental fees.

It seems clear that a) fluoridation is unlikely to be the cause of the decline in caries in Europe and North America b) the potential for adverse effects is real, and c) current evidence points in the direction of caution. Over the last decade, recommendations with respect to acceptable fluoride exposure have steadily declined, and cautions have increased. Any dental benefit that may accrue from fluoride exposure is fully achieved by controlled topical application of fluoride compounds by trained dental professionals, not by fluoride ingestion. [The analysis of Dr. Hardy Limeback (www.fluoridealert.org/limeback.htm), Head, Preventive Dentistry, at the University of Toronto, further clarifies these points.]

Canadian Association of Physicians for the Environment

On the basis of this "weight of evidence" we believe that fluoridation of drinking water is scientifically untenable, and should not be part of a public health initiative or program.

Sep-08

NTEU CHAPTER 280 - U.S. ENVIRONMENTAL PROTECTION AGENCY,
 BEN FRANKLIN STATION, BOX 7672, WASHINGTON D.C. 20044 -
 INTERNET <http://www.nteu280.org> E MAIL Al-Mu_gill:LA...

March 19, 2012
 Additional Information
 RE: **Report No. 45 of the
 Environment and Transportation
 Standing Committee**

DESCRIPTION NEWSLETTERS & CURRENT ISSUES PRESS RELEASES
SITE INDEX

WHY EPA HEADQUARTERS UNION OF SCIENTISTS OPPOSES FLUORIDATION

"Why EPA Headquarters' Union of Scientists Opposes Fluoridation."

The following documents why our union, formerly National Federation of Federal Employees Local 2050 and since April 1998 Chapter 280 of the National Treasury Employees Union, took the stand it did opposing fluoridation of drinking water supplies..Our union is comprised of and represents the approximately 1500 scientists, lawyers, engineers and other professional employees at EPA Headquarters here in Washington, D.C.

The union first became interested in this issue rather by accident. Like most Americans, including many physicians and dentists, most of our members had thought that fluoride's only effects were beneficial - reductions in tooth decay, etc. We too believed assurances of safety and effectiveness of water fluoridation.

Then, as EPA was engaged in revising its drinking water standard for fluoride in 1985, an employee came to the union with a complaint: he said he was being forced to write into the regulation a statement to the effect that EPA thought it was alright for children to have "funky" teeth. It was OK, EPA said, because it considered that condition to be only a *cosmetic* effect, not an adverse *health* effect. The reason for this EPA position was that it was under political pressure to set its health-based standard for fluoride at 4 mg/liter. At that level, EPA knew that a significant number of children develop moderate to severe dental fluorosis, but since it had deemed the effect as only cosmetic, EPA didn't have to set its health-based standard at a lower level to prevent it.

We tried to settle this ethics issue quietly, within the family, but EPA was unable or unwilling to resist external political pressure, and we took the fight public with a union *amicus curiae* brief in a lawsuit filed against EPA by a public interest group. The union has published on this initial involvement period in detail.\!

Since then our opposition to drinking water fluoridation has grown, based on the scientific literature documenting the increasingly out-of-control exposures to fluoride, the lack of benefit to dental health from ingestion of fluoride and the hazards to human health from such ingestion. These hazards include acute toxic hazard, such as to people with impaired kidney function, as well as chronic toxic hazards of gene mutations, cancer, reproductive effects, neurotoxicity, bone pathology and dental fluorosis. First, a review of recent neurotoxicity research results.

In 1995, Mullenix and co-workers \2 showed that rats given fluoride in drinking water at levels that give rise to plasma fluoride concentrations in the range seen in humans suffer neurotoxic effects that vary according to when the rats were given the fluoride - as adult animals, as young animals, or through the

placenta before birth. Those exposed before birth were born hyperactive and remained so throughout their lives. Those exposed as young or adult animals displayed depressed activity. Then in 1998, Guan and co-workers³ gave doses similar to those used by the Mullenix research group to try to understand the mechanism(s) underlying the effects seen by the Mullenix group. Guan's group found that several key chemicals in the brain - those that form the membrane of brain cells - were substantially depleted in rats given fluoride, as compared to those who did not get fluoride.

Another 1998 publication by Varner, Jensen and others⁴ reported on the brain- and kidney damaging effects in rats that were given fluoride in drinking water at the same level deemed "optimal" by pro-fluoridation groups, namely 1 part per million (1 ppm). Even more pronounced damage was seen in animals that got the fluoride in conjunction with aluminum. These results are especially disturbing because of the low dose level of fluoride that shows the toxic effect in rats - rats are more resistant to fluoride than humans. This latter statement is based on Mullenix's finding that it takes substantially more fluoride in the drinking water of rats than of humans to reach the same fluoride level in plasma. It is the level in plasma that determines how much fluoride is "seen" by particular tissues in the body. So when rats get 1 ppm in drinking water, their brains and kidneys are exposed to much less fluoride than humans getting 1 ppm, yet they are experiencing toxic effects. Thus we are compelled to consider the likelihood that humans are experiencing damage to their brains and kidneys at the "optimal" level of 1 ppm.

In support of this concern are results from two epidemiology studies from China^{5,6} that show decreases in I.Q. in children who get more fluoride than the control groups of children in each study. These decreases are about 5 to 10 I.Q. points in children aged 8 to 13 years.

Another troubling brain effect has recently surfaced: fluoride's interference with the function of the brain's pineal gland. The pineal gland produces melatonin which, among other roles, mediates the body's internal clock, doing such things as governing the onset of puberty. Jennifer Luke⁷ has shown that fluoride accumulates in the pineal gland and inhibits its production of melatonin. She showed in test animals that this inhibition causes an earlier onset of sexual maturity, an effect reported in humans as well in 1956, as part of the Kingston/Newburgh study, which is discussed below. In fluoridated Newburgh, young girls experienced earlier onset of menstruation (on average, by six months) than girls in non-fluoridated Kingston⁸.

From a risk assessment perspective, all these brain effect data are particularly compelling and disturbing because they are convergent.

We looked at the cancer data with alarm as well. There are epidemiology studies that are convergent with whole-animal and single-cell studies (dealing with the cancer hazard), just as the neurotoxicity research just mentioned all points in the same direction. EPA fired the Office of Drinking Water's chief toxicologist, Dr. William Marcus, who also was our local union's treasurer at the time, for refusing to remain silent on the cancer risk issue⁹. The judge who heard the lawsuit he brought against EPA over the firing made that finding - that EPA fired him over his fluoride work and not for the phony reason put forward by EPA management at his dismissal. Dr. Marcus won his lawsuit and is again at work at EPA. Documentation is available on request.

The type of cancer of particular concern with fluoride, although not the only type, is osteosarcoma, especially in males. The National Toxicology Program conducted a two-year study¹⁰ in which rats and mice were given sodium fluoride in drinking water. The positive result of that study (in which malignancies in tissues other than bone were also observed), particularly in male rats, is convergent with a host of data from tests showing fluoride's ability to cause mutations (a principal "trigger" mechanism for inducing a cell to become cancerous) e.g.^{11a, b, c, d} and data showing increases in osteosarcomas in

young men in New Jersey \12, Washington and Iowa \13 based on their drinking fluoridated water. It was his analysis, repeated statements about all these and other incriminating cancer data, and his requests for an independent, unbiased evaluation of them that got Dr. Marcus fired.

Bone pathology other than cancer is a concern as well. An excellent review of this issue was published by Diesendorf et al. in 1997 \14. Five epidemiology studies have shown a higher rate of hip fractures in fluoridated vs. non-fluoridated communities. \15a, b, c, d, e. Crippling skeletal fluorosis was the endpoint used by EPA to set its primary drinking water standard in 1986, and the ethical deficiencies in that standard setting process prompted our union to join the Natural Resources Defense Council in opposing the standard in court, as mentioned above.

Regarding the effectiveness of fluoride in reducing dental cavities, there has not been any double-blind study of fluoride's effectiveness as a caries preventative. There have been many, many small scale, selective publications on this issue that proponents cite to justify fluoridation, but the largest and most comprehensive study, one done by dentists trained by the National Institute of Dental Research, on over 39,000 school children aged 5-17 years, shows no significant differences (in terms of decayed, missing and filled teeth) among caries incidences in fluoridated, non-fluoridated and partially fluoridated communities.\16. The latest publication \17 on the fifty-year fluoridation experiment in two New York cities, Newburgh and Kingston, shows the same thing. The only significant difference in dental health between the two communities as a whole is that fluoridated Newburgh, N.Y. shows about twice the incidence of dental fluorosis (the first, visible sign of fluoride chronic toxicity) as seen in non □ fluoridated Kingston.

John Colquhoun's publication on this point of efficacy is especially important\18. Dr. Colquhoun was Principal Dental Officer for Auckland, the largest city in New Zealand, and a staunch supporter of fluoridation - until he was given the task of looking at the world-wide data on fluoridation's effectiveness in preventing cavities. The paper is titled, "Why I changed My Mind About Water Fluoridation." In it Colquhoun provides details on how data were manipulated to support fluoridation in English speaking countries, especially the U.S. and New Zealand. This paper explains why an ethical public health professional was compelled to do a 180 degree turn on fluoridation.

Further on the point of the tide turning against drinking water fluoridation, statements are now coming from other dentists in the pro-fluoride camp who are starting to warn that topical fluoride (e.g. fluoride in tooth paste) is the only significantly beneficial way in which that substance affects dental health\19, \20, \21. However, if the concentrations of fluoride in the oral cavity are sufficient to inhibit bacterial enzymes and cause other bacteriostatic effects, then those concentrations are also capable of producing adverse effects in mammalian tissue, which likewise relies on enzyme systems. This statement is based not only on common sense, but also on results of mutation studies which show that fluoride can cause gene mutations in mammalian and lower order tissues at fluoride concentrations estimated to be present in the mouth from fluoridated tooth paste\22. Further, there were tumors of the oral cavity seen in the NTP cancer study mentioned above, further strengthening concern over the toxicity of topically applied fluoride.

In any event, a person can choose whether to use fluoridated tooth paste or not (although finding non □ fluoridated kinds is getting harder and harder), but one cannot avoid fluoride when it is put into the public water supplies.

So, in addition to our concern over the toxicity of fluoride, we note the uncontrolled - and apparently uncontrollable - exposures to fluoride that are occurring nationwide via drinking water, processed foods, fluoride pesticide residues and dental care products. A recent report in the lay media\23, that, according

to the Centers for Disease Control, at least 22 percent of America's children now have dental fluorosis, is just one indication of this uncontrolled, excess exposure. The finding of nearly 12 percent incidence of dental fluorosis among children in un-fluoridated Kingston New York\17 is another. For governmental and other organizations to continue to push for *more* exposure in the face of current levels of over□ exposure coupled with an increasing crescendo of adverse toxicity findings is irrational and irresponsible at best.

Thus, we took the stand that a policy which makes the public water supply a vehicle for disseminating this toxic and phylogenetically useless (via ingestion, at any rate) substance is wrong.

We have also taken a direct step to protect the employees we represent from the risks of drinking fluoridated water. We applied EPA's risk control methodology, the Reference Dose, to the recent neurotoxicity data. The Reference Dose is the daily dose, expressed in milligrams of chemical per kilogram of body weight, that a person can receive over the long term with reasonable assurance of safety from adverse effects. Application of this methodology to the Varner et al.\4 data leads to a Reference Dose for fluoride of 0.000007 mg/kg-day. Persons who drink about one quart of fluoridated water from the public drinking water supply of the District of Columbia while at work receive about 0.01mg/kg-day from that source alone. This amount of fluoride is more than 100 times the Reference Dose. On the basis of these results the union filed a grievance, asking that EPA provide un-fluoridated drinking water to its employees.

The implication for the general public of these calculations is clear. Recent, peer-reviewed toxicity data, when applied to EPA's standard method for controlling risks from toxic chemicals, require an immediate halt to the use of the nation's drinking water reservoirs as disposal sites for the toxic waste of the phosphate fertilizer industry\24.

This document was prepared on behalf of the National Treasury Employees Union Chapter 280 by Chapter Senior Vice-President J. William Hirzy, J.D. For more information please call Dr. Hirzy at 202-260-4683.

END NOTE LITERATURE CITATIONS

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Canadian Organization:: Requesting Discontinuation of Artificial Water Fluoridation

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position: Fluoration de l'eau : position du CREDDO

Council of Canadians

website: www.canadians.org
Position: <http://www.canadians.org/water/issues/Unbottle> [It/fluoride.html](http://www.canadians.org/water/issues/Unbottle)

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website: <http://www.eausecours.org>

position: <http://eausecours.org/2009/10/fluoration/>

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website: www.endfluoridenow.com

Environmental Training Institute {ETI}

Email: Peter Van Caulart, director <etivc@iaw.on.ca>

Front Commun pour une Eau Saine (FCES) -- coalition of 10 groups

Le Conseil regional de l'environnement - Capitale Nationale (CRE)

Les Amies de la Terre de Quebec (ATQ)

L'Action des citoyens pour le maintien de la qualite de vie a Quebec (ACMQVQ)

L'Association des naturopathes agrees du Quebec (ANAQ)

La Ligue des droits et libertes de Quebec

L'Association quebecoise pour un contrat mondial de l'eau

Reseau du Forum social Quebec-Chaudiere-Appalache

L'Academie de dentisterie biocompatible du Quebec

La societe pour vaincre la pollution (SVP)

Association pour la sante environnementale du Quebec -

Environmental Health Association of Quebec (ASEQ-EHAQ)

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Parents of Fluoride Poisoned Children (PFPC}

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The Fluoride Education Project

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website:

http://www.newmediaexplorer.org/chris/2009/10/26/people_for_safe_drinking_water.htm

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Regenesis

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website: regenesiscanada@gmail.com

fluoride project: <http://www.voteoutfluoride.com>

Claudia Rodriguez-Larrain, Project Director: Fluoride Out. president@theregenesisproject.com

Waterloo Watch

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website: www.waterloowatch.com

Women and Health Protection (WHP)

Anne Rochon Ford, Co-ordinator annef@sympatico.ca

Facebook

People for Safe Drinking Water P4SDW

<http://www.facebook.com/home.php?#/group.php?gid=6404348583&ref=ts>

Thunder Bay

<http://www.facebook.com/topic.php?uid=2730376252&topic=11614#/group.php?gid=2730376252>

The Hidden Agenda: The Fluoride Deception

<http://www.facebook.com/FluorideDeception>

International Resources

Fluoride Action Network (FAN)

Email contact: Dr. Paul Connett, Executive Director
<paul@fluoridealert.org>,
website: www.fluoridealert.org

Fluoride Journal

website: <http://www.fluorideresearch.org/>

Fluoride Literature

A Bibliography of Scientific Literature on Fluoride:
<http://www.SIweb.org/bibliography.html>

History of Fluorine, Fluoride and Fluoridation

website: <http://www.fluoride-history.de/index.htm>

Fluoride Free Dentists

website: <http://www.fluoridefreedentist.com/>

Fluoride Fatigue book {free} by Dr. Spittle MB ChB, DPM

<http://www.pauapress.com/fluoride/files/1418.pdf>

International Academy of Oral Medicine and Toxicology

website: www.iaomt.org

Position: http://www.iaomt.org/articles/category_view.asp?intReleaseID-196&catid-30

In IAOMT's ongoing examination of the toxicological data on fluoride, the Academy has made several preliminary determinations over the last 18 years, each concluding that fluoride added to the public water supply, or prescribed as controlled-dose supplements, delivers no discernible health benefit, and causes a higher incidence of adverse health effects.

[IAOMT Fluoridation Position.pdf](#)

[IAOMT Medicine.pdf](#)

NRC {National Research Council}. 2006. Fluoride in Drinking Water: A Scientific Review of EPA's Standards. Washington, DC: The National Academies Press. [Available free online at: <http://www.nap.edu/catalog/11571.html>]

Petitions to the Auditor General of Canada

Petition 221 to the Auditor General of Canada: by Carole Clinch BA, BPHE
http://www.oag-bvg.gc.ca/internet/English/pet_221_e_30308.html

Petition 221B to the Auditor General of Canada: by Carole Clinch BA, BPHE
http://www.oag-bvg.gc.ca/internet/English/pet_221B_e_31256.html

Petition 221C to the Auditor General of Canada: by Carole Clinch BA, BPHE
http://www.oag-bvg.gc.ca/internet/English/pet_221C_e_30942.html

Petition 221D to the Auditor General of Canada: by Carole Clinch BA, BPHE
http://www.oag-bvg.gc.ca/internet/English/pet_221D_e_31257.html

Petition 221E to the Auditor General of Canada: by Carole Clinch BA, BPHE
<http://www.newmediaexplorer.org/chris/Clinch%202009%20Nov%2024%20AG%20Petition%20Regarding%20False%20and%20Misleading%20Information.pdf>

Petition 243 to the Auditor General of Canada: by Rob Button BScPharm
http://www.oag-bvg.gc.ca/internet/English/pet_243_e_30927.html

Petition 244 to the Auditor General of Canada: by Dr. James Beck M.D., PhD
http://www.oag-bvg.gc.ca/internet/English/pet_244_e_30930.html

Petition 245 to the Auditor General of Canada: by Peter Van Caulart Dip. A.Ed.,
CES, CEI, Director of the Environmental Training Institute
http://www.oag-bvg.gc.ca/internet/English/pet_245_e_30941.html

CITY OF WINDSOR
COUNCIL SERVICES

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ADDITIONAL
INFORMATION

JTEM

REF ID NO. it5

ENVIRONMENTAL

REGULATION

STANDARD; CONTROL

Windsor City Council:

Re: Review of Report Number 59 of the Windsor-Essex County Environment Committee

I have received a copy of the subject report and the attached PowerPoint presentation entitled "Artificial Water Fluoridation-Environmental Effects and Legal Implications". As Medical Officer of Health for the City of Windsor, I feel it is important to make comments on this report in support of the continuation of community water fluoridation.

The presentation which was made to the Environment Committee makes a number of assertions regarding community water fluoridation. In reviewing the document, I can find no references anywhere in the presentation to the scientific literature and as such I have difficulty assessing its credibility.

The presentation states that hydrofluorosilicic acid is a toxic waste product. Hydrofluorosilicic acid is a compound which is produced by manufacturers who also produce fertilizer. Hydrofluorosilicic acid is specifically produced for a number of uses including water fluoridation.

Masten and Haneke in their 2001 toxicological summary for fluorosilicic acid state;

'Although current data indicate that silicofluorates" are used in over 9,000 U.S. water treatment systems serving over 120 million individuals, exposure via drinking water is expected to be minimal since both compounds hydrolyze almost completely under these conditions'

In the concentrated form, as it would be in manufacture and use before dilution, hydrofluorosilicic acid does deserve care and respect for safe handling, however when dissolved in very low concentrations in water we are no longer dealing with the original concentrated substance.

Assertions are made in the presentation that hydrofluorosilicic acid is a hazardous waste and a toxic substance.

Letter to Windsor City Council

Re: Review of Report Number 59 of the Windsor-Essex County Environment Committee

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I would like to quote from a federal document entitled "Joint Government of Canada Response to Environmental Petition Number 221 Filed Under Section 22 of the Auditor General Act Received November 19, 2007-Petition to Discontinue Water Fluoridation (March 18, 2008):

The US EPA classifies hydrofluorosilicic acid as a class I hazardous waste. Is hydrofluorosilicic acid a Class I hazardous waste or equivalent in Canada?

Health Canada Response:

The U.S. Resource Conservation and Recovery Act (RCRA) establishes a federal program to manage hazardous wastes from cradle to grave in the United States, to ensure that hazardous waste is handled in a manner that protects human health and the environment. It classifies waste in categories through a listing process. Hydrofluorosilicic acid is included in lists of commercial chemical products in a concentrated (unused) form. The RCRA focuses on ensuring the safe disposal of these waste products.

In Canada, the responsibility for managing hazardous waste rests primarily with the provinces and territories, who control the waste producers, the recycling, processing and elimination facilities, and the transportation of waste within their territory. The federal government regulates international and interprovincial movements. The main definitions for hazardous wastes in Canada are under CEPA regulations for exports and imports of hazardous wastes and hazardous recyclable materials. **Fluoridation additives certified for use in drinking water are not classified as hazardous waste in Canada** [Underlined and Bolded by Dr. Heimann).

Are Health Canada Environment Canada and other government departments aware that inorganic arsenic, lead, mercury and inorganic fluorides (e.g., hydrofluorosilicic acid) are on the CEPA 2006 toxic substances list and that hydrofluorosilicic acid is not naturally present in the environment?

Health Canada Response:

Health Canada works with Environment Canada to assess substances under the *Canadian Environmental Protection Act, 1999* (CEPA), which includes prioritizing substances for assessment. Under the Act, a substance is considered "CEPA-toxic" if it enters or may enter the environment in amounts that may pose a risk to human health, to the environment (such as fish or wildlife) and/or to the environment upon which life depends (such as water, soil, and air). Substances determined to be "CEPA-toxic" may be added to the List of Toxic Substances (Schedule I of CEPA 1999). The process focuses on whether the substance is entering the environment at levels of concern.

Inorganic fluorides are "toxic" to the environment as defined under CEPA and this assessment focused principally on four inorganic fluorides: hydrogen fluoride (HF), calcium fluoride (CaF₂), sodium fluoride (NaF), and sulphur hexafluoride (SF₆). These compounds were considered the most relevant of the inorganic fluorides on the basis of quantities released to the Canadian environment, environmental

Letter to Windsor City Council

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concentrations, and 10, <ecological effects on biota. **Hydrofluorosilicic acid was not assessed for this class location [underlined and bottled by Dr. Heimann].**

Municipal drinking water licences require chemicals used to meet all applicable standards as set by both the American Water Works Association and the American National Standards Institute Safety Criteria Standards NSF/60 and NSF/61. The National Sanitation Foundation is the internationally recognized expert agency on certifying products and writing standards for food, water, and consumer goods. To date they have certified that the three available fluoride-containing water treatment additives hydrofluorosilicic acid, sodium fluorosilicate, and sodium fluoride meet the NSF ANSI Standard 60 which deals with the health effects of drinking water treatment chemicals.

Also under Ontario Regulations under the Safe Drinking Water Act, operating authorities must test regularly for levels of fluoride as well as heavy metals, including arsenic and lead.

With respect to water fluoridation and the environment, a study by Pollick in 2004 states that;

'Scientific evidence supports the fluoridation of public water supplies as safe for the environment and beneficial to people. Reports at the local, national, and international levels have continued to support this most important public health measure. There appears to be no concern about the environmental aspect of water fluoridation among those experts who have investigated the matter.'

A study by Osterman [1990] in evaluating water fluoridation in Montreal states that;

'Overall, river fluoride concentrations theoretically would be raised by 0.001-0.002 mg/l; a value not measured by current analytical techniques'.

Osterman [1990] also states:

'a literature review did not reveal any examples of municipal water fluoridation causing **recommended environmental concentrations to be exceeded, although excesses have occurred in several cases of severe industrial pollution.**'

Osterman [1990] concludes:

'In conclusion, by using a mass balance approach, fluoridation-related changes in environmental concentrations of fluoride may be estimated from knowledge of municipal

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Letter to Windsor City Council

Re: Review of Report Number 59 of the Windsor-Essex County Environment Committee

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water management systems and data which are usually readily available from appropriate water authorities. Generally speaking, these changes will be minimal and, except when accompanied by serious industrial pollution, will remain below toxic levels recorded in the literature and recommendations by scientific authorities for the protection of the environment and human health.'

Finally, in a presentation to the City of Orillia Public Forum on Fluoridation on February 29, 2012, Mr. Tim Fletcher, Supervisor - Water quality Standards Unit, Standards Development branch, Ontario Ministry of the Environment concluded the following points:

Fluoride concentrations are not decreased significantly through the sewage treatment process, thus levels in municipal wastewater effluent would be similar to the levels added (i.e. 0.5 to 0.8mg/L).

Impacts to aquatic life (i.e. changes in growth, reproduction or survival) are unlikely to occur until concentrations exceed 1 mg/L for extended periods of time.

Fluoridated drinking water is well below this concentration and would not be expected to impact aquatic life.

A review of the fluoride data from 1986 to 2007 has shown no increasing trend in raw (source) water for the 192 drinking water systems that have been monitored by DWSP [Drinking Water Surveillance Program].

Data also shows that, on average, concentrations in Great Lakes drinking water intakes are at or below the CWQG [Canadian Water Quality Guidelines] for inorganic fluoride.

;

While the information provided is not exhaustive, I believe that it does bring the report provided by the Windsor-Essex County Environment Committee into question.

I would ask you to keep this information in mind as you review the question of community water fluoridation.

.....- = a. _____

G. Allen Heimann, MD, MHSc
Medical Officer of Health

(. *ill* Letter to Windsor City .Council
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