



THE EFFECTS OF FLUORIDATION

This letter refers to the articles about water treatment and fluoridated drinking water (FDW) (“Engineers cited for role in environmental reporting enhancements,” p. 10) and PEO’s public policy advisory role (“Policy development still fertile ground for engineering input,” p. 17) in the July/August 2014 issue of *Engineering Dimensions*.

On April 29, 2014, Kathleen Thiessen, PhD, senior scientist at the Oak Ridge Center of Risk Analysis, swore an affidavit to the Peel Region council on its fluoridation program (tinyurl.com/m6sn3db, p. 20). Her assessment, based on 120+ international scientific references spanning the last 25 years (75 per cent published from 2000 to today), led her to conclude that FDW is:

- ineffective (topical application, not ingestion, is the main modality of tooth decay benefits);
- unsafe (17 different adverse health effects impacting human organs, cells, children’s brains, bones, teeth and blood arise from this toxic pollutant in our drinking water);
- ethically wrong (violates fundamental principle of doctors and dentists obtaining individual informed consent prior to and during medical treatment); and
- unnecessary and obsolete (better means exist to improve dental health at less cost).

From this we see that Ontario’s FDW policy is inherently flawed and failed. It hasn’t achieved its original goals of reduced tooth decay and a

maximum dental fluorosis incidence of 10 per cent among children. Nor has it prevented other significant, adverse health effects. Public health officials err greatly in defending FDW; namely, they confuse this drug’s fluoride concentration (mg/L or ppm) with the dosage (mg/L/kg body weight) and the resulting daily dose (mg/L consumed). Science shows excess dosage to be the real cause of FDW adverse health effects.

In figure 6 of her affidavit, Thiessen noted the average thresholds of toxic fluoride ranges from 0.005 mg/kg/day for impaired thyroid function to 0.02 mg/kg/day for moderate dental fluorosis, 0.05 mg/kg/day for severe dental fluorosis and 0.09 mg/kg/day for risk of bone fractures. For infants, the range of fluoride intake can vary from 0.06 mg/kg/day to 0.15 mg/kg/day versus 0.02 mg/kg/day to 0.05 mg/kg/day for children one to 10 years old. Both ranges exceed most of the eight toxic thresholds she shows for fluoride intakes.

Toxic levels of the fluoride vary greatly by age, stage, size, activities and underlying health conditions, such as diabetes and diet (i.e. sugar and salt content), of those consuming FDW or food and beverages prepared using it. Daily doses range from under a litre of water (e.g. nursing babies) to over 10 litres (e.g. outdoor construction workers, elite athletes). Overdoses and adverse health effects thus can vary greatly across the population.

Public health officials or water treatment plant engineers/technicians can control neither dosage nor dose. Simply, it cannot be regulated. Those “authorities” who advocate FDW basically damage the public’s general health and undermine their collective trust in public dental health care, thereby potentially reducing their trust in other public health measures.

For these reasons, I recommend PEO adopt the policy action plan outlined in my colleague Gerry Cooper’s letter also published in this issue (p. 73).

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A BIGGER ISSUE

On May 26, 2014, a Health Canada (HC) letter in response to an *Access to Information Act* request for international or domestic scientific studies, especially any on double blind, random, controlled clinical trials or toxicological analyses on the efficacy and human safety of injecting hydrofluosilicic acid in Canadian drinking water, stated it had no such records. This is an amazing admission that “the emperor has no clothes”!

It suggests that HC has failed the Canadian public in its duty of care and due diligence in the conduct of its role in support of fluoridation. Its policy advice to ministers of the Crown, be they

federal, provincial or territorial, seems to be built on a foundation of sand. HC has seemingly been content to serve status quo seekers in other public health organizations rather than to serve the public good by seeking out the truth that recent, science-based research and fact-finding evidence has achieved. HC is in denial over the flaws and follies of fluoridation. It is dogmatic and close-minded on this issue. It strives to preserve and protect the status quo. Other levels of government have conse-

quently been misled and poorly advised. A return to reason is urgently needed.

Essentially, what was purportedly a dental health public policy has instead become a wastewater management policy issue. Some 99 per cent of fluoridated drinking water is now used for purposes other than dental care and eventually finds its way to wastewater treatment facilities. Fluoride is not removed from the waste streams. Instead, it is released to reservoirs, ponds, rivers, lakes or oceans rather than being treated via reverse osmosis or other technologies. Thus, this toxic pollutant is injected into the environment to play further havoc with the health of humans and other living specimens, be they land-based or marine life. This is illegal per the *Ontario Safe Drinking Water Act, 2002*.

In Israel, Minister of Health Yael German recently ended fluoridation despite the vocal and vociferous attacks of fluoridation promoters. This decision is a model for the public health community in both Israel and other communities around the world. It is sound, based on the current scientific research literature and the need to protect the health of citizens from the unnecessary ingestion of fluoride. Fluoridation proponents appear to be unwilling to defend their views in open, public debate. Perhaps this is due to current science not supporting their claims that ingesting fluoride is harmless or that it greatly lowers the incidence of tooth decay.

The foregoing constitutes further justification of the call for PEO action, to assume a lead role in bringing about a timely end to the current fluoridation policy and related practices in Ontario.

For your reference, the Health Canada document mentioned above can be found here: www.wedeservesafewater.com/forum/uploaded/HealthCanadaFOIPJune2014snip.pdf.

A brief on the news from Israel can be found here: www.bmj.com/content/349/bmj.g5240.full?ct=ct. Vladimir Gagachev, P.Eng., Mississauga, ON



NEED FOR PEO ACTION PLAN

This letter responds to the July/August 2014 issue of *Engineering Dimensions*, which deals with PEO's policy advisory role ("Policy development still fertile ground for engineering input," p. 17).

On August 15, 2014, Hardy Limeback, PhD, DDS, former head of preventive dentistry, University of Toronto, urged Israel to ban fluoridation. It has now done so. His reasoning is based on his personal research of fluoridation and his mastery of international research studies. Importantly, his work shows ingested fluoride in tooth dentin causes teeth to become more brittle and prone to fracturing. He has treated many patients for dental fluorosis over 30 years, requiring uninsurable expensive repairs costing typically \$700 to \$1,400 for each tooth with a 10- to 15-year renewal cycle.

Doctors Limeback and Kathleen Thiessen, PhD, among other experts, show fluoridated drinking water (FDW) to be an outdated policy. A purportedly dental health-care public policy has now become a wastewater management policy issue. Some 99 per cent of FDW is now used for non-medical purposes and finds its way to wastewater treatment facilities. But it is not being treated there. Hence fluoride is released to source water, such as reservoirs, ponds, rivers, lakes and oceans. This toxic pollutant is returned to the environment to play further havoc with human and other living entities. This is illegal per the *Ontario Safe Drinking Water Act, 2002*.

Provincial and local public health officials who resist such change undermine the public's general health and reduce their trust in public dental health care. PEO is well positioned through its members' multiple roles in water treatment processes to provide policy leadership. Ontario ought to replace its FDW policy and practice with a well-reasoned and rational approach. The following PEO policy action plan is proposed:

- issue a public statement to all interested parties and Ontario residents declaring its opposition to FDW and demanding appropriate action by the Ontario government to end its use;
- provide appropriate guidance to professional engineers and meet in the coming months with its members via the chapters to articulate its new FDW policy;

Letters to the editor are welcomed, but must be kept to no more than 500 words, and are subject to editing for length, clarity and style. Publication is at the editor's discretion; unsigned letters will not be published. The ideas expressed do not necessarily reflect the opinions and policies of the association, nor does the association assume responsibility for the opinions expressed. Emailed letters should be sent with "Letter to the editor" in the subject line. All letters pertaining to a current PEO issue are also forwarded to the appropriate committee for information. Address letters to jcoombes@peo.on.ca.

[LETTERS]

- engage the Ontario Ministry of the Environment (MOE) to have:
 - MOE take the provincial lead to repeal the Ontario *Fluoridation Act, 1990*, and
 - pursuant to section 20 of the *Safe Drinking Water Act, 2002* implement a regulation banning immediate further fluoridation of Ontario drinking water treatment plants;
- insist the Ontario government withdraw now from the intergovernmental coordinating committee chaired by Health Canada on FDW to demonstrate its opposition to this dangerous and obsolete practice;
- suggest that the Ontario government introduce via its chief medical officer of health a 21st century public dental care program to supersede FDW. Emphasis should be put on counselling per the *Ontario Health Care Consent Act* of parents and students on the roles of diet, dental hygiene, annual dentist checkups and funded dental treatments to deal with caries and/or dental fluorosis among the poor; and
- advise the CEO of Engineers Canada of its FDW guidance and recommend it take similar action vis-a-vis the federal government and other provincial governments.

Gerry Cooper, P.Eng., Toronto, ON

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