



Title:	Municipal Water Fluoridation
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Position of Elgin St. Thomas Public Health

Based on the weight of credible scientific evidence for the safety and effectiveness of water fluoridation and the estimated increase in financial costs to maintain current levels of oral health in Elgin St. Thomas residents in the absence of water fluoridation, Elgin St. Thomas Public Health recommends that the municipal drinking water in Elgin St. Thomas be fluoridated.

Introduction:

Fluorides are minerals found naturally in rocks, soil and water. In the early 1900s, it was discovered that people in communities with naturally high fluoride content in their water, had low levels of tooth decay. Subsequently, studies were conducted that confirmed the effect of fluoridated water in preventing tooth decay. Community water fluoridation, the practice of adjusting the level of fluoride in potable drinking water to maximize its benefit to oral health, has been practiced for over 60 years in many jurisdictions around the world.

Water fluoridation has been studied extensively by major scientific and professional bodies and continues to be reviewed to this day. To date, the overwhelming body of evidence attests to the effectiveness and safety of this public health measure. The effectiveness of community water fluoridation in reducing the prevalence of dental decay has been endorsed by more than 100 national and international dental, allied health and other organizations.

These include, but are not limited to:

Table 1.
Organizations supporting water fluoridation to reduce occurrence of tooth decay Canadian International

Canadian	International
Health Canada	World Health Organization
Canadian Medical Association	(WHO) Centers for Disease
Ontario Medical Association	Control and Prevention, USA
Canadian Public Health	Pan American Health Organization
Association Canadian Paediatric	European Organization for Caries
Society Association of Local Public	Research
Health Agencies, On.	American Dental Association
Ontario Dental Association	British Medical Association
Canadian Dental	British Dental Association
Hygienists Association	Australian Dental
	Association

Fluoride has been used internationally in different ways to prevent tooth decay e.g. fluoridated milk and salt, fluoride tablets, fluoridated tooth paste, gels, mouth rinses. Scientific and governmental bodies monitor the availability of fluoride in various forms and the effects of fluoride use on the population. In Canada, Health Canada periodically reviews all current scientific literature to make recommendations for the optimal level of fluoride in water and to set drinking water guidelines for municipal water suppliers. The decision to fluoridate or cease fluoridating municipal drinking water supplies in Ontario is made by local municipalities in accordance with the province's Fluoridation Act (1).

In 2007, Health Canada asked a panel of experts to review the health effects of community water fluoridation and to make recommendations beneficial to the dental health of the public and still protect it from adverse effects. The panel set the maximum acceptable concentration (MAC) for fluoride in drinking water to 1.5 mg/L stating that this level is unlikely to cause adverse health effects; and it adopted 0.7mg/L as the optimal target concentration (2). These values were published again in the Guidelines for Canadian Drinking Water Quality in 2010 (3). Under the Safe Drinking Water Act, the Ontario Drinking Water Quality Standards regulation, also set out safety standards for the maximum allowable concentration of fluoride in drinking water as 1.5 mg/L (4). Lastly, the Ontario Public Health Standards set the optimal fluoride range at 0.6-0.8 mg/L (5).

The level of fluoride in municipal water supplies in Elgin St. Thomas where fluoride is added has always been in accordance with provincial guidelines and standards. For operational convenience, the Lake Huron & Elgin Area Water Supply system targets 0.6 mg/L (6). At 0.6 mg/L, this municipal drinking water actually has a lower level of fluoride than that which naturally occurs in some parts of Ontario, e.g. Perth County.

Boards of health must take specific action if the water fluoride levels occur above or below the range of 0.6 - 0.8 mg/L for more than 90 days. The Ontario Public Health Standards includes provision of fluoride alternatives to segments of the population at high risk for dental caries when water fluoride levels fall below 0.6 mg/L.

Since the discovery of the protective effects of fluoride against tooth decay in the 1930s and 1940s, there has been opposition to water fluoridation for a variety of changing reasons. Concerns expressed have included adverse health effects; cost; issues around individual consent; effectiveness of fluoride for dental health; and alternative sources.

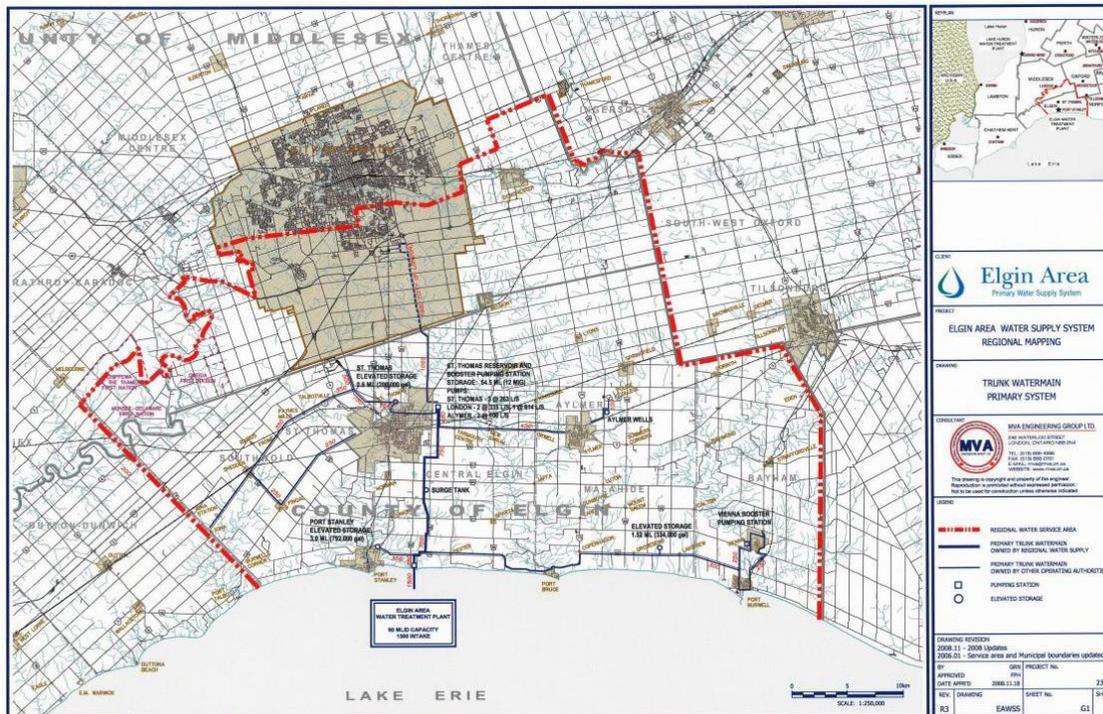
Several municipalities have revisited the practice of water fluoridation. Some jurisdictions decided to discontinue water fluoridation while others continued the practice. By referendum, Waterloo (November 2010) decided to discontinue water fluoridation by the very slim margin of 50.3% to 49.7%. Windsor discontinued fluoridation in early 2013. Calgary City Council also voted to discontinue water fluoridation (February 2011) and in 2016 voted against a motion to revisit whether to reinitiate the practice. The City of London Council voted to continue water fluoridation in 2012, as did Toronto and Halton Region in 2011, and Hamilton in 2008. In the United States, almost 75% of the population served by public water systems has access to fluoridated water.

The water supply in Elgin St. Thomas has been fluoridated since 1967. On November 2, 1964 the City of St. Thomas undertook a plebiscite in accordance with the Fluoridation Act. As a result of the plebiscite, fluoride was added to the municipal drinking water from the Elgin Area water treatment plant when the construction of the plant was completed in 1967. The municipalities currently serviced through the Elgin Water System are Southwold, Central Elgin, St. Thomas, Aylmer, Malahide and Bayham (7) (8).

The municipality of West Elgin chose to discontinue fluoridation on July 4, 2003. West Elgin chose to purchase its water from Tri-County Drinking Water System, instead of the Elgin Area Primary Water Supply System. Fluoride was discontinued mainly due to increased expenses, as construction of a new building to house fluoride supplies was estimated to cost \$100,000 (9). Dutton-Dunwich receives a third of its water from the Elgin Area water treatment plant and two thirds of its water from the Tri-County Drinking Water System. As a result, Dutton-Dunwich receives some fluoride in its water, but only a third of the concentration (10).

The map below outlines in red the areas in Elgin County that are fluoridated.

Elgin Area Map (55)



Rationale:

1. Fluoride occurs naturally in water and works systemically and topically

Fluoride salts are minerals found in rocks and soil. When water flows over rocks and soil, it dissolves the fluoride compounds. As a result, most water supplies (both fresh and salt) contain some naturally occurring fluoride. Sea water contains 1.2 to 1.5 mg/L of fluoride (11), while fresh water in Canada contains 0.01 to 11 mg/L (12). The Elgin Area Water Supply System participates in the Ministry of the Environment's Drinking Water Surveillance Program (DWSP) which includes the testing of fluoride in the raw water from Lake Erie twice annually. According to routine tests conducted by the Elgin Area Water Supply Systems, the level of fluoride in Lake Erie is within the range of 0.09 to 0.17 mg/L. Testing and documentation over the past 10 years has indicated that this has remained constant. Lake Erie is the principal source of water supply for the County of Elgin St. Thomas (13). Water sources in several Ontario communities have naturally high fluoride levels, considerably above those of treated Elgin St. Thomas water.

Fluoride works both topically and systemically to prevent tooth decay by increasing the resistance of tooth enamel to decay.

Systemic effect

The systemic effect of fluoride occurs when fluoride is ingested during the formation of teeth. The fluoride becomes incorporated into the structures throughout the tooth surface and provides long lasting protection against tooth

decay (14). In other jurisdictions, fluoride is accessed via salt, milk, or as a dietary supplement.

Topical effect

Topical fluorides occur once the teeth are present in the mouth. The fluoride is incorporated into the surface of the teeth making them more resistant to tooth decay. The major source of topical fluoride is toothpaste, professionally applied fluoride foams, gels and varnishes. It should be noted that systemic fluoride also provides protection topically, as low levels of fluoride present in saliva and in plaque (a film covering the teeth) can also prevent and reverse the process of dental decay.

2. *Fluoridation has been scientifically proven to reduce dental caries*

In the 1920s and 1930s it was discovered through observation, that there was a correlation between fluoride levels in the water and incidence of dental decay (15). In 1940, four community studies were conducted to examine the effect on dental health of adding sodium fluoride to fluoride deficient water supplies. The results of these studies confirmed that fluoridation is a practical and safe public health measure for the prevention of tooth decay. Since that time, fluoridation has been the subject of numerous additional studies.

The effectiveness of fluoride in reducing caries has been studied for many years and in many jurisdictions internationally. These studies have shown that fluoride is an effective preventive agent to reduce the incidence of dental caries in various populations. Opponents of water fluoridation often question the evidence that confirms the effectiveness of water fluoridation.

a. *Scientific evidence for determining the effectiveness of water fluoridation*

Dental health and the impact of water fluoridation varies between communities for a number of reasons, including underlying dental health, additional sources of fluoride, socioeconomic status, access to dental care, and nutrition. For this reason, the results of individual studies on the impact of water fluoridation can be challenging to interpret.

The situation is further complicated by the fact that fluoridating the water in one community can benefit neighbouring communities with a "halo" or "diffusion" effect. This happens when fluoridated water is consumed through food/drink processed in a fluoridated community, or when residents commute or move into and out of the fluoridated community. Comparisons then between the oral health of residents of neighbouring communities when one community is fluoridated and one is not, may underestimate the effect of water fluoridation. One study which quantified this effect found that children residing in non-fluoridated areas with minimum halo effect had higher decay rates than children living in fluoridated communities or children living in non-fluoridated areas with a high halo effect (16).

For all of these reasons, the most appropriate way to assess the population

health impacts of water fluoridation is to have experts in the subject matter look at all the available literature in a systematic and reproducible way, and draw conclusions from papers that are judged against standardized criteria to be scientifically sound. This formal method of assessing health interventions for populations is called a systematic review.

The effectiveness and safety of water fluoridation have been confirmed by many large systematic reviews (17) (18) (19) (20) (21) (22); including those by the Australian National Health and Medical Research Council, the University of York, and the US Centers for Disease Control and Prevention.

b. Reduction in caries

The existing body of evidence confirms that water fluoridation continues to be beneficial for reducing dental caries. Systematic reviews show that the introduction of water fluoridation into an area significantly increases the proportion of caries-free children. Mean decay rates also decrease compared with areas which were non-fluoridated over the same time period. Overall, these comparisons show a reduced prevalence of dental caries in the range of 18-40 % when water fluoridation is implemented (23).

The findings of systematic reviews also suggest that tooth decay increases in a population after fluoridation is discontinued. Several studies published since 1999 have shown that stopping water fluoridation in a community generally results in an increased prevalence of dental caries (19) (23) (24).

c. Population level impacts

The World Health Organization states that water fluoridation is the safest, most economical and most effective means of preventing and controlling tooth decay on a population level (25). While the majority of studies examined the effect of water fluoridation on the dental health of children; several reliable, high quality studies and a literature review have also established that adults and seniors benefit from this measure (26) (27).

Most people who reside in industrialized countries for most of their lifetime, age with all or most of their teeth due to increased access to preventive dental care and better information on the deleterious effects of refined sugars. Fluoridation, in all its methods of application, has contributed to this.

Research also shows that the benefits of water fluoridation reach disadvantaged sectors of the population who are most difficult to reach with conventional preventive health services (28) (29) (30) (31) (32). Low income residents and recent immigrants are often the least likely to receive the benefits of fluoride through other health professional delivery mechanisms, such as attending a dental care provider's office for topical application of fluoride. It should be recognized that seniors, who often do not have third party dental insurance, also benefit from water fluoridation. Seniors are

vulnerable to tooth decay, in particular root decay. Given that all population groups benefit, water fluoridation is an equitable prevention strategy.

The Saskatchewan Dental Health Screening Program reported that, “The caries- free proportion of children attending schools in communities with water fluoridation was 58.1% compared to 43.9% for children attending schools in communities without water fluoridation.” Therefore 14.2% of the children would have increased incidence of decay. Elgin St. Thomas has approximately 15,264 students in the public, catholic and private school system. By applying these research findings locally and if fluoride was removed from the water supply, approximately 14.2% of 15,264 local students would have increased decay. That would be an increase of 2,167 students with new cavities. The Chief Medical Officer of Health of Ontario has estimated that it costs \$38.00 per child for dental treatment for every \$1 invested in community water fluoridation.

d. Canadian impact

Before water fluoridation in Toronto, children had an average of 5-7 decayed teeth. Today, Toronto children on average get 1-2 decayed teeth. In most upper and middle income families, many children do not have cavities for most of their childhood. This improvement in dental health cannot be solely attributed to water fluoridation, but it has been a contributing factor. Unfortunately, we do not have historical Elgin St. Thomas data to demonstrate such a local effect.

Surveillance of dental decay rates in Ontario and other areas of Canada indicate that tooth decay rates are generally higher in non-fluoridated communities and that decay rates increase after the cessation of fluoridation. The following are examples of recent studies.

As presented in the Saskatchewan Dental Health Screening Program 2008-2009 Report, dental health disparities were noted between children attending schools in communities with water fluoridation and those in schools without access to community water fluoridation (33). A more recent report evaluating this program noted similar differences: children with access to fluoridated water experienced less tooth decay (34).

However, a 2007 Greater Toronto Area study did not show any significant difference in the oral health of neighbouring communities, one which was fluoridated and one which was not. In Brampton, Ontario which has fluoridated water, 64% of children were caries free compared to 61% caries free children in neighbouring Caledon, which is not fluoridated (35). Possible explanations for these findings include the halo effect from neighbouring fluoridated communities, and the higher socioeconomic status of Caledon residents compared with Brampton. This is an example of the complexity of interpreting the findings of individual studies.

The Ontario municipality of Dryden discontinued fluoridation in 2001. The provincially mandated dental survey of elementary school children showed

that, in Dryden, the caries level of 5-year olds increased by 26% from 2001 to 2008 (36)

3. Fluoridation at optimal levels does not cause adverse health effects.

a. General Health Effects

One of the concerns frequently raised about water fluoridation is whether the chemical used to fluoridate water is toxic. The toxicity of any substance is typically related to the level of exposure or dose (the amount ingested over a period of time). Even substances essential for life; like water, oxygen and salt can be toxic in excess amounts. In concentrations used for water fluoridation (0.6mg/L, for Elgin St. Thomas), fluoride is not toxic or harmful. There is a difference in the effect of a massive dose of fluoride and the effect of taking small amounts of fluoride daily to reduce cavities in teeth. It is widely recognized that the ingestion of fluoride in low concentrations is good for teeth, but the regular ingestion of excessive amounts of fluoride can lead to debilitating skeletal fluorosis.

The World Health Organization has documented that certain areas in China, Central Asia and Africa have very high levels of naturally occurring fluoride in drinking water and cases of skeletal fluorosis (37). For example, a study conducted in 16 large farms, villages and towns in the Ethiopian Rift Valley between 1977 and 1985 found that the fluoride level of drinking-water collected from wells there reached upwards of 36.0 mg/L. This concentration is several times greater than the concentration required to optimally fluoridate drinking water for dental benefit.

The following table shows the amount of optimally fluoridate water that would have to be ingested on a regular basis to produce toxic effects.

Table 2.

Exposure to fluoride and associated toxic effects with examples

Exposure	Example for intake of quantity of optimally fluoridated water (0.6mg/L)	Impact
=2 mg/L	Child (under the age of 8 years) consumes 17c glasses of water daily for a prolonged period	Mild dental fluorosis
=8 mg/L	Child or adult consumes 67 glasses daily for a prolong period	Skeletal fluorosis
=16 mg oral/kg body weight	A 20 kg child will have to drink 2666 glasses of water (about 140 jugs of orange juice of 128 ounces each) at one sitting	Acute lethal dose (child)
2,500-10,000 mg oral	An adult male would need to consume at least 4167 litres of water (about 28 bath tubs) that is fluoridated at optimum levels continuously in one sitting	Acute lethal dose (adult)

Other effects of water fluoridation on health have been studied. These studies include impacts on blood, bone, kidney, liver, lungs, reproduction, and on prevalence and causal relationship to cancer. The weight of the evidence from Canadian and international studies confirm that water fluoridated at optimum levels for dental benefit does not cause adverse health effects (15) (17) (19) (21) (22) (38) (39).

More recently, in response to a 2016 Section 21 Petition submitted by the Fluoride Action Network to prohibit the purposeful addition of fluoridation chemicals to American water supplies, the US Environmental Protection Agency (EPA) conducted its own comprehensive review of the literature. In February of 2017, the EPA denied the petition as it was unable to “set forth a scientifically defensible basis to conclude that any persons have suffered neurotoxic harm as a result of exposure to fluoride in the US through the purposeful addition of fluoridation chemicals to drinking water or otherwise from fluoride exposure in the US” (40).

b. *Dental and skeletal fluorosis*

Of all the potential adverse effects of fluoride, dental and skeletal effects are the best documented. These effects are most common in areas where natural levels of fluoride in water are very high and considerably more than the concentration of fluoride in drinking water which is adjusted for preventing tooth decay.

Dental fluorosis

Prolonged ingestion of fluoride during tooth formation can lead to tooth discoloration, which in most cases occurs in the mild form. The mild form of dental fluorosis manifests as slight, whitish spots that are barely visible and tend to fade over time. The risk of developing dental fluorosis is greatest up to the age of 6-8 years depending on the stage of tooth formation. Other causes, such as exposure to amoxicillin at an early age, can have a similar effect on tooth appearance (21). Mild or very mild fluorosis is hard to detect by the untrained eye, but moderate fluorosis, caused by the ingestion of even larger quantities of fluoride during tooth formation, does affect tooth appearance (22). Children aged 8 years and younger exposed to excessive amounts of fluoride have an increased chance of developing moderate or severe fluorosis in the form of pits in the tooth enamel, along with brown stains on teeth. In Canada, very few cases of moderate or severe fluorosis have been diagnosed. Further investigation of these cases revealed that they were study participants who had migrated from other areas of the world where there are high fluoride levels occurring naturally in the water (36).

Skeletal fluorosis

According to the UK Medical Research Council skeletal fluorosis can occur after prolonged ingestion of water containing 8mg/L or more of fluoride. A recent US report states that studies currently available provide no evidence that long-term exposure, to water fluoride concentrations of 4 mg/L, carries a risk of skeletal fluorosis. The literature indicates that skeletal fluorosis is

extremely rare in North America (2) (22). This fluoride level of 4mg/L is the current enforceable drinking water standard in the US (41), and is much higher than Canada's maximum allowable concentration of 1.5mg/L in Canada.

c. Bone fracture

The 2007 systematic review conducted in Australia (17) analyzed results from three existing systematic reviews (19) (28) (42), and concluded that water fluoridation at levels aimed at preventing dental caries has little effect on fracture risk. They also did not uncover any association between hip fractures and water fluoridation.

d. Cancer

In 1991, the National Cancer Institute (NCI) conducted an exhaustive review of the US tumour registries and found no cancer risk attributable to fluoride in humans (43). In 1993, the National Research Council (NRC) presented a review of some fifty epidemiological studies on the relationship between drinking water fluoridation and cancer, including osteosarcoma. The NRC concluded that there was no proven link between cancer and the natural or artificial presence of fluoride in water (44). The 2000 systematic review from the UK also concluded that no clear association between water fluoridation and overall cancer incidence or mortality (for "all cause" cancer, and specifically for bone cancer and osteosarcoma) exists (19). According to the reports of these committees, the current scientific knowledge on this subject does not suggest a link between water fluoridation and cancer of any kind. In fact, the Canadian Cancer Society, National Cancer Institute, and several other cancer associations worldwide support the fluoridation of drinking water for dental benefit.

4. Fluoridation is not the only population wide health strategy

Water fluoridation is one of several examples of public health measures where additives are used to achieve health benefits in a population. It is not feasible to obtain explicit individual informed consent for a population wide preventive intervention. The decision is usually made by appropriate policy makers (elected representatives or designates) who rely on best available evidence.

Other examples of additives used to achieve population wide health benefits include the following:

- Iodine is added to table salt to prevent thyroid disease
- Vitamin D is added to milk and juice to prevent rickets
- Folic acid is added to flour to prevent birth defects

Another example of a population wide health strategy is the chlorination of drinking water to prevent the spread of water borne diseases such as E.coli, cholera, and typhoid. The benefits of these population- wide prevention strategies are well known and recognized in today's society and have contributed to improved health and quality of life.

Adding vitamin C to foods to prevent scurvy has origins similar to those of water

fluoridation. It was through observation of the effect of citrus foods on soldiers suffering from scurvy that the health benefit of vitamin C was ultimately discovered. Currently, vitamin C is also artificially manufactured and used for its health and other benefits.

- 5. Hydrofluorosilicic acid is an industrial waste product that is used to fluoridate drinking water but it is not uncommon to use products from one industry in other products*

Hydrofluorosilicic acid, the substance added to drinking water, is a by-product of the phosphate industry. It is not uncommon for by-products of one industry to be used in other products of a different industry.

The important issue is the safety of the product for its intended use. To this end, all treatment chemicals added to Elgin St. Thomas water are stringently controlled and rigorously monitored. The Elgin Area Water Supply System purchases its fluoride from Brenntag and meets all the requirements for drinking water treatment chemicals pursuant to the Ontario Ministry of the Environment standards and regulations. The municipal water supplier uses only those chemicals that are certified by the National Sanitation Foundation (NSF) and the American National Standards Institute (ANSI) STANDARD 60 (45). To meet the requirements of ANSI/NSF Standard 60, the chemicals must be tested in a recognized laboratory. Hydrofluorosilicic acid is rapidly and completely hydrolyzed to fluoride ion, leaving no residual fluorosilicate intermediates (46).

- 6. Fluoride is considered essential to good health, even though it is not defined as an essential nutrient*

The WHO lists fluoride as one of the fourteen minerals considered essential to good health (47). Prevention of chronic disease may be considered to be a factor in deciding nutrients essential for the body. Using this rationale, the Linus Pauling Institute for Micronutrient Research states that fluoride can be considered an essential trace element (48). Due to its health benefits, the Institute of Medicine of the National Academies of Sciences also declared that fluoride was an important nutrient (49). A report by the U.S. Surgeon General in 2004 stated that fluoride is a nutrient that is potentially beneficial for bones (50).

- 7. Reconstituting infant formula with fluoridated water is not a risk for fluorosis.*

According to Health Canada, current scientific literature does not support a link between consumption of infant formula reconstituted with drinking water containing fluoride at 0.6-0.8mg/L and the risk of moderate/severe fluorosis (51). The critical period for fluorosis of the anterior permanent teeth is after the first twelve months of life (52) (53), by which time the majority of children have ceased exclusive infant formula consumption. In addition, the free fluoride available for absorption by the body in reconstituted infant formula is likely less than that available from drinking water (2). Moreover, increased fluorosis risk is

associated with extended periods (e.g., multiple years) of exposure to fluoride. Therefore, slightly higher exposure in the first year of life may not be as much of a concern if it is subsequently followed by continuous low exposure.

8. It is less viable to provide fluoride through alternate delivery systems

If Elgin St. Thomas were to discontinue water fluoridation, it would be incumbent on municipalities to ensure that proper alternative measures are introduced to maintain the current oral health status of its residents. If this was not done then the consequences could be a gradual decline in the oral health status of the Elgin St. Thomas population, resulting in costly treatment for dental disease. The people who would be most negatively affected by removal of fluoride from Elgin water, without the availability of replacement preventive measures, are those at the low end of the socioeconomic scale. These are the people who can least afford to be further disadvantaged given the deleterious effect of untreated dental disease on nutrition, self-esteem, employability and general health and well-being. Others affected are those who for geography, mobility and personal anxiety are unable to access care in the County.

The cost and viability of alternate mechanisms for providing fluoride to populations need to be considered when examining the issue of defluoridation of Elgin St. Thomas water. The City of Hamilton (54) conducted an analysis of the cost of delivering fluoride through four methods: water fluoridation, topical fluoride application twice per year by public health services, topical fluoride application twice per year by private dentists and, distribution of tooth pastes and tooth brushes. The results of this analysis are presented in the table below.

Table 3.
Annual costs of alternate fluoride delivery approaches for City of Hamilton, 2008

Preventive measure	Annual Cost/person
Topical fluoride application twice per year to all high risk individuals by Public Health Services	\$44.5
Topical fluoride application twice per year to all high risk individuals by Private Dentists	\$96.12
Distribution of tooth pastes and tooth brushes to all members of the population	\$8.5

The cost for these alternative approaches may be somewhat different for Elgin St. Thomas, but data from Hamilton, can be used as a benchmark for planning purposes.

In Calgary where fluoridation has been ceased, the cost savings of not fluoridating the water has been insufficient to deliver alternative preventive and treatment programs to populations previously benefiting from community water fluoridation (55).

Water fluoridation is the most economical method to apply this preventive measure to reduce the burden of dental disease in the population. Apart from

the direct operational and capital costs of these alternate fluoride delivery mechanisms, the potential added cost for increased waste management needs to be considered. For instance, additional paper or plastic cups, gloves, masks, Styrofoam trays and applicator tips, used for these topically applied fluorides, will have to be disposed. The environmental impact of the increased production of these products as well as the cost of disposal of the generated waste must be considered.

Implications for Elgin St. Thomas Public Health Services:

Promotion of Fluoridated Water

1. The ESTPH's Fluoride Position Statement will be shared with local municipalities, dentists and primary care providers.
2. Updates highlighting relevant new research findings on community water fluoridation will be posted to the ESTPH website for health care professionals and the public to access.
3. As the need arises and as upon request, ESTPH will consider developing and giving presentations on the benefits of community water fluoridation and topical fluoride applications to community partners and stakeholders.

Continuation of Fluoridated Water

1. Fluoride levels will be monitored monthly according to Ministry protocol. Monthly fluoride reports will be obtained through the Elgin Area Water System and reviewed by the ESTPH Director of Health Protection or designate.
2. Oral Health Services will continue to document and monitor fluorosis levels in the students of Elgin St. Thomas.

Discontinuation of Fluoridated Water

1. Elgin St. Thomas would need to educate the community in the absence of water fluoridation by:
 - Distributing fluoride information sheets through other programs in Elgin St. Thomas Public Health such as the Early Years Team.
 - Launching a communication campaign
2. Elgin St. Thomas Public Health could expect to see increased severity of tooth decay and more urgent treatment needs among the children screened. This would translate into greater treatment costs for the Province's Healthy Smiles Ontario Program.
3. Elgin St. Thomas Public Health would need to consider expanding our Fluoride Varnish Program. This would cost approximately \$40,280.00 for supplies alone. Additional staffing would also be needed to run this program.
4. In order to ensure that low income children have the necessary dental tools to perform daily oral hygiene, toothbrushes and toothpaste would need to be distributed to approximately 3000 students. The Gilland Report identified that the percent of low income individuals in Elgin County is between 0.16-0.24% (58). Using the high end of the scale there would be 3663 low income students in the public, catholic and private school systems. The cost of distribution would be \$5,495.04 (\$1.50 x 3663 students). Children from age 0 to 4 would also need added measures to protect them against decay, but it is difficult to estimate the number of below school age children and their oral health needs.
5. The removal of fluoride from the water, due to the need for more oral health preventive services, would mean an additional 2 to 4 oral health staff to provide education, screening and preventive services.

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