



Title:	Municipal Water Fluoridation
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Position of Southwestern Public Health

Southwestern Public Health, together with over 90 national and international governments and health organizations (1), endorses the fluoridation of municipal drinking water (to minimum therapeutic levels required for efficacy) as a safe and effective protection measure for the oral health of the communities we serve. Community water fluoridation benefits all residents in a community, regardless of age, socioeconomic status, education, oral hygiene practices or access to routine dental care, making it a truly equitable public health practice (2,3).

Introduction

Fluorides are minerals found naturally in rocks, soil and almost all water sources (4). 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 70 years in many jurisdictions around the world (5). 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 (6).

Effects

Dental caries, commonly known as “cavities”, are one of the most common chronic diseases of childhood as described by the Centers of Disease Control (3). 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 that does not have naturally occurring fluoride significantly increases the proportion

of caries-free children. Mean decay rates also decrease compared with areas which were non-fluoridated, over the same period of time. Overall, these comparisons show a reduced prevalence of dental caries in the range of 18-40% when water fluoridation is implemented (7).

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

- 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 (8,9).
- Topical fluoride effects occur once 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 fluorides is toothpaste, professionally applied fluoride foams, gels and varnishes (8,9).
- 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 (8,9).

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 at a population level (9).

The benefits of water fluoridation extend to sectors of the population who are most difficult to reach with conventional preventive health services (10), (11), (12), (13), (14), (15). Community residents impacted by poverty, recent immigrants, children and seniors 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.

Recommended Fluoridation Levels

In 2007, Health Canada established 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 while still protecting 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 0.7 mg/L as the optimal target concentration (16). These values were published again in and supported by:

- The Guidelines for Canadian Drinking Water Quality (2017) (17);
- The Safe Drinking Water Act (18);
- The Ontario Drinking Water Quality Standards regulation (19); and
- The Ontario Public Health Standards set the optimal fluoride range at 0.6-0.8 mg/L (19).

Southwestern Public Health, together with our partners in municipal water works, shall follow the requirements outlined in the Safe Drinking Water and Fluoride Monitoring

Protocol (2018) as prescribed by the Ministry of Health and Long-Term Care to ensure municipal water sources are monitored in accordance with the legislative acts named.

Safety

Too much fluoride from any source, including toothpaste, can cause dental fluorosis. Fluorosis, a cosmetic condition that can appear as white chalky spots on the tooth surface, is not harmful to the health of individuals or to the function of teeth. The prevalence of moderate to severe dental fluorosis was considered too low to report in the most recent oral health component of the Canadian Health Measures Survey. (20) The findings and recommendations of Health Canada's Fluoride Expert Panel (2007) states "the current maximum acceptable concentration (MAC) of 1.5 mg/L of fluoride in drinking water is unlikely to cause adverse health effects, including cancer, bone fracture, immunotoxicity, reproductive/developmental toxicity, genotoxicity, and/or neurotoxicity". (16) Fluoridation of municipal water sources at levels between 0.6 mg/L to 0.8 mg/L are significantly below the MAC of fluoride described in this statement.

Conclusion

The evidence pertaining to the positive health benefits of community water fluoridation is significant, despite a person's age, income level or access to dental care. Because of this, it is the position of SWPH to support fluoridating community municipal water sources at optimal therapeutic levels (as supported by the literature).

Supporting Position and Policy Statements

[Canadian Association of Public Health Dentistry – Position Statement on Community Water Fluoridation \(2014\)](#)

[Canadian Dental Association – Position on Use of Fluorides in Caries Prevention \(2012\)](#)

[Canadian Dental Hygienists Association – Position Statement : Community Water Fluoridation \(2011\)](#)

[Government of Canada - Chief Medical Officer of Health and Chief Dental Officer – Position Statement on Community Water Fluoridation \(2016\)](#)

[Health Canada – Fact Sheet – Community Water Fluoridation \(2016\)](#)

[Royal College of Dental Surgeons of Ontario – Policy Statement – Water Fluoridation \(2003\)](#)

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