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Community Water Fluoridation(CWF) Evidence & Key Messages

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Purpose

- Community Water Fluoridation
- CWF in the context of healthy community
- To share the science research and emerging evidence on CWF
- The real cost of removing water fluoridation
- Key resources and references

Fluoride in Water

- Almost all water contains some naturally occurring level of fluoride.
- Seawater naturally contains about 1.4 mg/L of fluoride, and freshwater in Canada has about 0.01 to 11 mg/L.
- It is found in the ground, minerals, air, streams, and plants.
- It is not considered a drug when used to adjust the fluoride content of drinking water and is instead considered a mineral or natural element contributing to the formation and health of teeth.
- The fluoride used for water fluoridation is naturally derived primarily from apatite, a mineral that is very common in the Earth's crust

[Canadian Water Quality Guidelines for the Protection of Aquatic Life - Inorganic Fluorides](#)

What is Community Water Fluoridation?

- Community water fluoridation (CWF) is the process of monitoring and adjusting the fluoride level in drinking water to the optimal level **for prevention of dental decay**
- The Centers for Disease Control and Prevention (CDC) consider community water fluoridation **one of ten great public health achievements of the 20th**
- The Canadian Task Force on Preventive Health Care gives drinking water fluoridation an **A, which is the highest possible grade**. The rating is based on sufficient scientific data showing that water fluoridation is the most effective approach.
- Widely endorsed by major and credible public health, medical and scientific communities

[About Community Water Fluoridation | Fluoridation | CDC](#)

Canadian Public Health Association on water fluoridation

[Position-Fluoridation.PDF](#)

Why Community Water Fluoridation?

- **Preventative:** prevents tooth decay and irreversible tooth damage in children and adults before treatment is required
- **Equitable:** improves oral health for everyone, regardless of age, income, or access to dental insurance
- **Regulated and Monitored:** ensure optimal fluoride level is maintained
- **Safe:** decades of research support safety at the recommended concentration
- **Evidence-Based:** Endorsed by Health Canada, CPS, CDC, WHO
- **Cost-Effective:** reduces dental treatment costs for families and healthcare systems. Every dollar spent on CWF saves \$5.49 to \$93.19

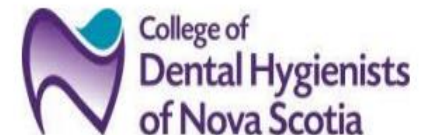
[The State of Community Water Fluoridation across Canada - Canada.ca](http://Canada.ca)

Organizations who endorse CWF

CWF is endorsed by more than 90 provincial, national, and international professional organizations, associations, and governments

In Nova Scotia, this includes:

- IWK Health – Department of Dentistry
- Dalhousie University – Faculty of Dentistry
- Nova Scotia Health – Public Health
- Department of Health & Wellness – Public Health Branch
- Nova Scotia Dental Association
- College of Dental Hygienists of Nova Scotia



[N.S. Dental Association Stressing Importance of Community Water Fluoridation - Nova Scotia Dental Association](#)



Fluoride Varnish ≠ Water Fluoridation

- Varnish is helpful—but it's not a substitute
- Varnish requires clinic visits; fluoridation works through the tap
- Varnish is short-acting; fluoridation is continuous
- Best outcomes when both are used together

What is the Fluoride Varnish Program (FVP)?

The FVP is a Public Health program that offers two extra applications of fluoride to teeth for students in pre-primary to grade 6 in selected elementary schools in communities who would benefit most from additional opportunities to receive fluoride

Is Fluoride Safe Long-Term?

- Yes—at 0.7 mg/L, it's safe and effective
- No proven links to cancer, thyroid or neurotoxicity at this level
- Mild fluorosis is cosmetic and rare
- Used safely for 75+ years in Canada and globally
- Fluoridation improves the mineral quality of water without altering its taste, smell or appearance.
- Water fluoridation has no impact on natural or aquatic environment

Worker Safety and Fluoride Use

- All water treatment chemicals (e.g., chlorine) require care
- Fluoride is handled in small, controlled amounts
- Proper PPE and training ensure staff safety
- No unique risk compared to other treatment chemicals

Supporting Safe and Sustainable Water Fluoridation

Challenge

What It Means in Practice

Chemical Handling Risks

Fluoride additives (e.g., hydrofluorosilicic acid) are corrosive and require careful storage, PPE, and spill protocols.

Precision Required

Maintaining fluoride levels within 0.7 mg/L needs constant monitoring and expert dosing.

Equipment Wear

Fluoride chemicals can damage pipes, pumps, and dosing systems over time.

Staffing & Cost Pressures

Small water systems often lack dedicated staff or budget for ongoing maintenance and compliance reporting.

Innovative Solutions Available

- Pre-mixed, safer fluoride formulations
- Automated dosing with real-time monitoring
- Modular fluoridation units for small systems
- Remote alert systems to support operational teams

Resources:

- Guidelines for Canadian Drinking Water Quality: Guideline Technical Document – Fluoride
[Page 3: Guidelines for Canadian Drinking Water Quality: Guideline Technical Document – Fluoride - Canada.ca](https://www2.gov.gc.ca/gov2013/00039178.htm)
- Engineering and administrative recommendations for water fluoridation in US –CDC 2021
<https://www.cdc.gov/mmwr/preview/mmwrhtml/00039178.htm>
- Fluoride in drinking water-WHO 2004
<https://www.who.int/docs/default-source/wash-documents/wash-chemicals/fluoride-background-document.pdf>

Cost of CWF

- Typical cost: \$1–\$2 per person per year
- Saves \$38 for every \$1 invested (CDC)
- Cheaper than filling potholes or treating cavities in ER
- One of the most cost-effective public health strategies

“Fluoridation has been proven to reduce tooth decay by up to 30 percent and the cost to fluoridate water pays for itself. Every dollar invested in community water fluoridation saves anywhere from \$5 to as much as \$93 in dental treatment costs for patients. Municipalities and utilities that decide to remove CWF will have to be prepared for a spike in associated dental costs for citizens.”

Nova Scotia’s dental and health communities believe we can’t afford not to fluoridate,” said Dr. Karst. “We pledge to work with all Nova Scotia municipalities and residents to help secure the future of community water fluoridation in this province.”

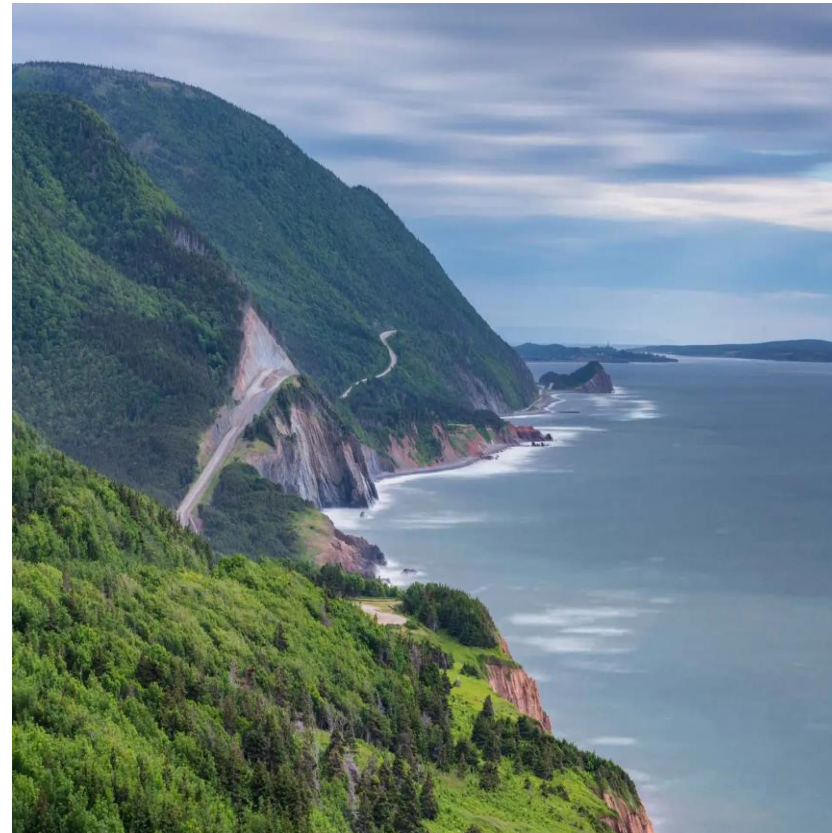
Dr. Claire Karst, President of the Nova Scotia Dental Association

Dental Decay

- Dental decay can be invasive in a person and their family's daily life due to:
 - Pain
 - Infection
 - Sleep disturbances cascading impacts on growth and development
 - Lost time at work & school
 - Damage to developing adult teeth structure/alignment



Nova Scotia Water Structure and Trust



Canada and NS Context: CWF

Canada

- [Guidelines for Canadian Drinking Water Quality](#)
- Health Canada sets guidelines for all aspects of water quality
- The last [update to fluoride](#) was in 2010
- [State of CWF in Canada 2022](#) (PHAC)

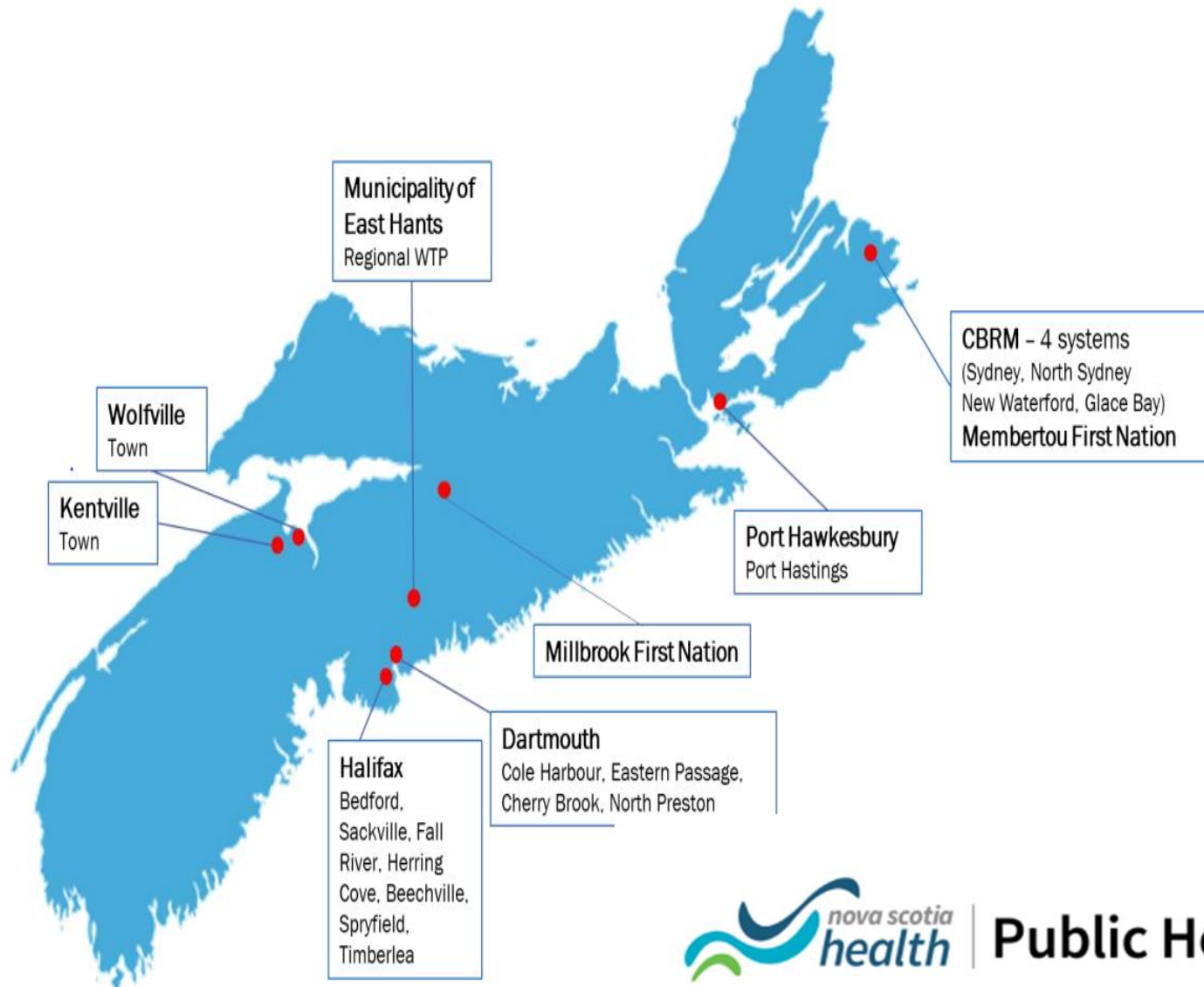
Nova Scotia

- Nova Scotia Department of Environment and Climate Change ([ECC](#)) [regulates water utilities](#)
- Adopts GCDWQ and fluoride guidelines
- In 2022, 50.4% of Nova Scotians accessed fluoride through CWF

Municipal

- Maintain water utility
- Decision to initiate CWF in NS made by municipalities
- Often decided by plebiscites or other community participation
- Role of municipalities – monitor and test daily

CWF offered in many communities across NS



Halifax

- Lake Major offline since **2020**; Pockwock offline **May 2023–Dec 2024**
- Raised public concerns by lack of transparency and lack of communication
- Lake Major fluoridation may be delayed 5–7 years.

https://www.reddit.com/r/halifax/comments/1h0pkq5/til_halifax_has_is_not_currently_fluoridating_its/

Cape Breton/Pictou County

- **Sydney** has been adding fluoride to its public water supply since 1968 as a public health measure to reduce tooth decay. The water is fluoridated at a level of 1 milligram per liter, which is 1 part per million, in line with [National Health and Medical Research Council](#) (NHMRC) guidelines.
- **New Glasgow** Water fluoridation only stopped at the end of March 2025, as the northern Nova Scotia town used up the supply of fluoride it had on hand. The council decision was based on cost saving of around **\$20,000** annually! It had been fluoridating its water since 1975. No document from Public Health or dental association resources

*2024 discredited study from a branch of the US Department of Health and Human services (criticized by the American Dental Association for unorthodox research methods and failure to follow peer review)

*Water treatment plant operators

West Hants-Lessons from Discontinued CWF

- **Service Area:** Three Mile Plains, Garlands Crossing, Curry's Corner, and Wentworth Road.
- **Fluoride History:** Community Water Fluoridation (CWF) discontinued in **2002** due to prioritizing iron removal from drinking water.
- **Impact on Oral Health:**
 - Dentists practicing in Windsor during the 1990s observed **remarkably fewer cavities in children** while CWF was in place.
 - **Several years after 2002**, this protective effect diminished and cavity rates in children **leveled out**.

Town of Wolfville

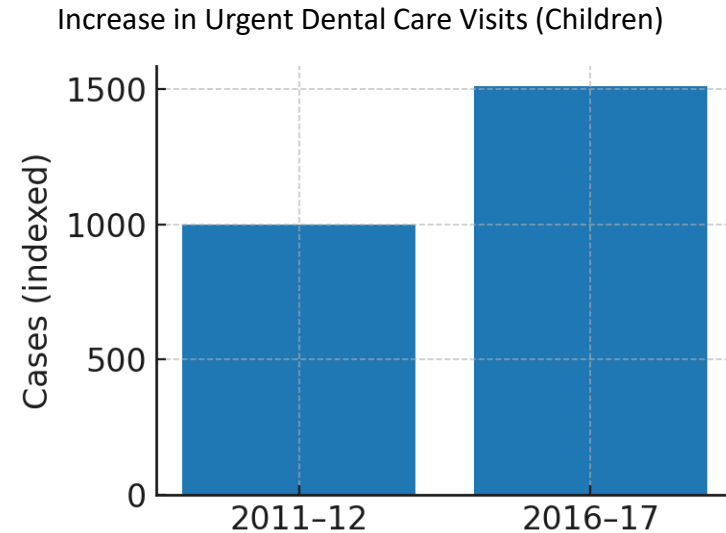
- A long-standing practice: Water fluoridation was introduced to the town in **1959**, a measure spearheaded by a local dentist.
- Municipally determined: In Nova Scotia, the decision to fluoridate water is made by individual municipalities. While not a part of standard treatment, the town's Water Utility has maintained the practice.
- Ongoing oversight: Fluoridation levels are regularly monitored and tested to ensure they meet Health Canada's standards. This is done to achieve the optimal concentration of 0.7 mg/L recommended for dental health, while remaining well below the maximum acceptable concentration of 1.5 mg/L.
- Periodic review: The town has, in the past, directed staff to review and report on the practice. This is common for municipalities with fluoridation programs.

Cost of Removing Water Fluoridation Lessons from Canada

Ontario • Calgary • Nova Scotia

Windsor Ontario's Experience: A Cautionary Tale

2013: Windsor removed fluoride (8–3 vote).
2016–17: 51% increase in urgent dental visits among children.
Health officials called it a 'huge mistake.'
2018: Fluoride reinstated (8–3 vote).
Reintroduction cost: \$850,000 in infrastructure upgrades.



[Fluoride to be added back in to Windsor, Tecumseh, LaSalle water systems Wednesday | CBC News](#)

Calgary vs. Edmonton: The Contrast

After Calgary stopped fluoridation in 2011:

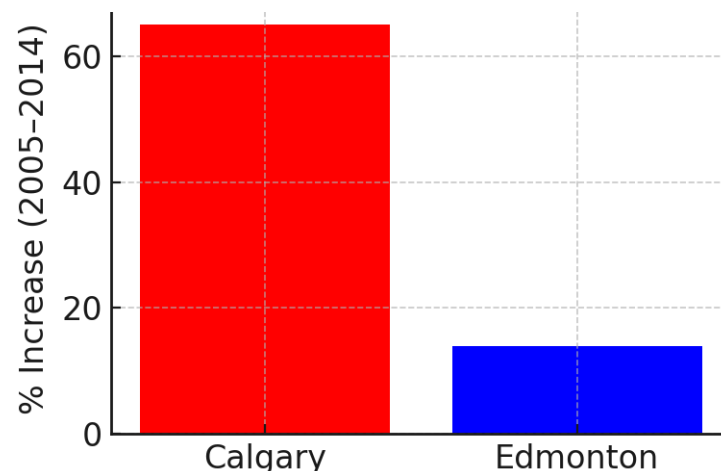
- 65% rise in cavities in children's baby teeth by 2013–14.

In Edmonton (fluoridation continued):

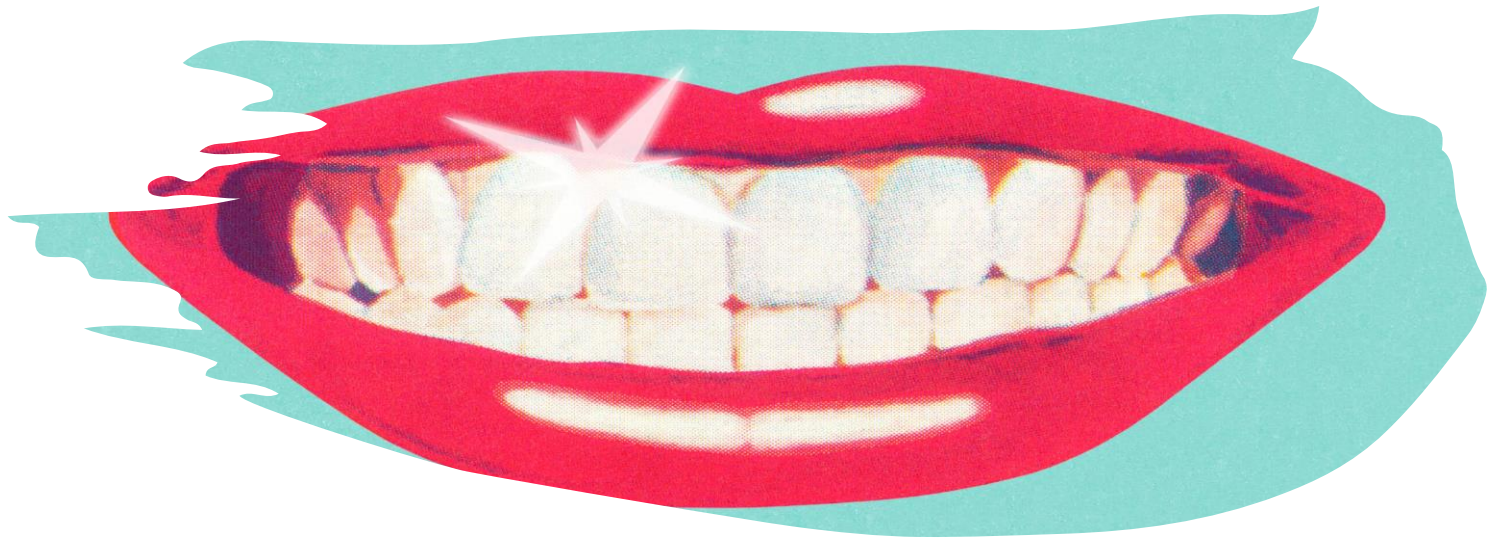
- Only a 14% rise.

Cost of reinstatement \$30 M

Rise in Cavities in Children's Baby Teeth



Quote: *'We weren't looking at tiny cavities—they were destroyed teeth.'*
— Calgary Youth Dental Program



Why Calgary Brought Fluoride Back

I voted against fluoridation in 2011. Ten years later, the data—and the rise of anti-science rhetoric—changed my mind.

<https://macleans.ca/society/why-calgary-brought-fluoride-back/>

Fluoride in Calgary's water



Public Health

Why CWF Matters: Quebec's Experience with Poor Oral Health Outcomes

- According to the latest oral health data in Quebec:
- 🧒 Children in Quebec experience **40–50% more cavities** than school-aged children elsewhere in North America.
- 🦷 **3 in 4 adults** with at least one natural tooth have signs of **periodontal disease** and have already had cavities in **more than half** their teeth.
- 😬 **Complete tooth loss (edentulism)** rates in Quebec are **among the highest** in Canada.

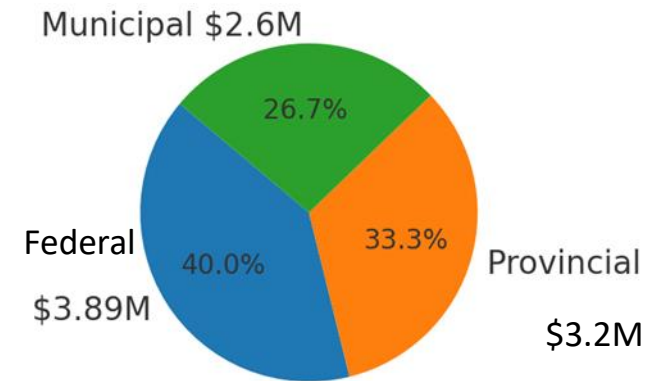
Age Group	Quebec (%)	Ontario (%)
45–64 years	13%	5%
65+ years	40%	20%

Lessons from Other Municipalities

Municipality	Decision	Outcome	Lesson
Halifax (NS)	Stopped 2024	High cost and long duration of reinstatement	Public trust and transparency
Windsor(NS)	Stopped 2002	High cavities and decay in children	Short term prioritization long term impacts of caried dental burden
New Glasgow (NS)	Stopped 2024	Risk of higher cavities & inequities	Short-term optics, long-term cost
Calgary (AB)	Stopped 2011	65% rise in cavities, expensive reinstatement amount to \$30 M	Prevention cheaper than correction
Windsor (ON)	Stopped → Reinstated	\$850K reinstatement, increased dental burden	Reversal is costly

Kentville Water Structure Investment

- Kentville:
 - \$9.7M invested in water & wastewater infrastructure.
 - Federal: \$3.89M | Provincial: \$3.24M | Municipal: \$2.6M.
 - Shows proactive community investment beyond mandates.



"Investing in improved wastewater and drinking water facilities is an important part of delivering on our government's priority to build vibrant and sustainable communities. This is why I am proud to announce more than \$3.8 million in federal funding to support this project, which will increase access to potable water for the residents of Kentville. With projects like this one, we are not only preserving public health and protecting the environment, we are also equipping communities with the infrastructure they need for population growth and economic recovery."

Kody Blois, Member of Parliament for Kings-Hants, on behalf of the Honourable Dominic LeBlanc, Minister of Intergovernmental Affairs, Infrastructure and Communities

[Canada and Nova Scotia invest in new water and wastewater infrastructure in Kentville - Canada.ca](https://www.canada.ca/en/infrastructure/2023/05/canada-and-nova-scotia-invest-in-new-water-and-wastewater-infrastructure-in-kentville.html)

Kentville Today

Current Status and Opportunity

- Community Fluoridation currently inactive.
- Community already invests \$9.7M in water/wastewater infrastructure.
- Opportunity to proactively protect residents' dental health.

Key Takeaways

- Removing fluoride has immediate, measurable harms (Windsor ON, Calgary).
- Reinstatement costs taxpayers heavily (\$30 M in Calgary, \$850K in Windsor, 4 years in Halifax).
- Nova Scotia's Halifax interruptions show infrastructure fragility & trust erosion.
- Kentville demonstrates proactive, non-mandated investment in public health infrastructure.

Conclusion: Prevention is cheaper than correction — in both teeth and trust.



“Investing in Prevention: A Case for Restoring Community Water Fluoridation in Kentville” *Protecting Public Health, Promoting Equity, and Preventing Future Costs”*

Align with strengthening community
wellbeing through smart preventive policy

Learning from others lessons

Equity: protects all residents, especially
children

Cost-effective: small annual investment,
huge health returns

Final Message

Fluoridation is safe, equitable, cost-effective, and science-backed. It quietly protects every tooth, every day—especially for those who need it most. Fluoride varnish is a supplement, not a substitute. The best public health outcomes come from using both.

References and Resources

- Nova Scotia Public Health Statement [Infographic Community Water Fluoridation Dec 11 2024.pdf](#)
- Nova Scotia Dental Association Statement [N.S. Dental Association Stressing Importance of Community Water Fluoridation - Nova Scotia Dental Association](#)
- Department of Nova Scotia Environment and Climate Change [Fluoride | Inspection, Compliance and Enforcement](#)
- Morteza Bashash, et al. Environmental Health Perspectives. Volume 125, Issue 9 CID: 097017 Prenatal fluoride exposure and cognitive outcomes in children at 4 and 6-12 years of age in Mexico <https://doi.org/10.1289/EHP655>
- The real cost of removing water fluoridation report 2013- A Health Equity Impact Assessment by Emily Wong Wellesley Institute
- The State of Community Fluoridation across Canada 2022 report prepared by the Chief Dental officer of Canada, Public Health Agency of Canada [The State of Community Water Fluoridation across Canada - Canada.ca](#)
- Position Statement of Director of Public Health in Quebec 2013 [Community water fluoridation - Position of the Québec Director of Public Health](#)
- **Video** Dr. Gerry Uswak, an associate professor at the University of Saskatchewan's college of dentistry whose area of expertise is dental public health: The Science Behind Water Fluoridation: [The science behind adding fluoride to drinking water | CBC.ca](#)
- **Video** Dr. Lindsay McLaren, Professor of Community Health and Sciences University of Calgary: [What happened when Calgary removed fluoride from its water supply | PBS News](#)
- McLaren L, Patterson SK, Faris P, et al. Fluoridation cessation and children's dental caries: A 7-year follow-up evaluation of Grade 2 schoolchildren in Calgary and Edmonton, Canada. Community Dent Oral Epidemiol. 2022;50:391–403. 10.1111/cdoe.12685 <https://pmc.ncbi.nlm.nih.gov/articles/PMC9542152/>

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