Community Water Fluoridation

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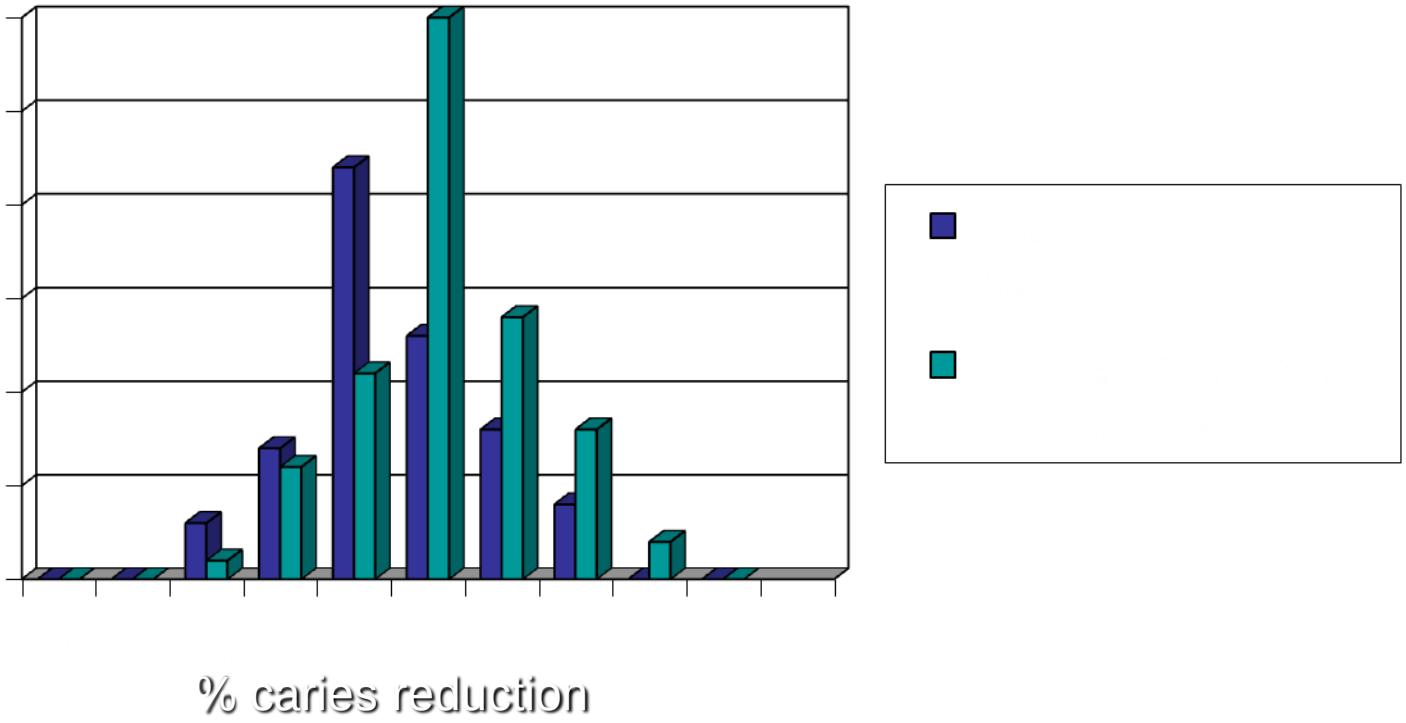
Brief History of Fluoride

- Fluorides are ionic compounds of the element fluorine that is found in the earth's crust (dirt)
- Fluorine is found in nature only in combination with other elements eg. NaF
- Fluoride occurs in our oceans and fresh water supplies frequently at a concentration of 1ppm

Brief History of Fluoride

- Jan. 1945 - Grand Rapids, Michigan became the first city to fluoridate its water supply
- June 1945 - Brantford, Ontario became the first Canadian city to fluoridate its water supply
- Both have demonstrated a 50-65% reduction in caries
- Toronto City Council first approved water fluoridation in 1955

Number of Studies versus Percentage Caries Reduction with Water Fluoridation



Water Fluoridation Reduces Caries Prevalence

McDonagh M, Whiting P, Bradley M, Cooper J, Sutton A, Chestnutt I, et al. A Systematic Review of Public Water Fluoridation, September 2000.

Benefits of Water Fluoridation

- At 1 ppm 20-40% reduction in caries activity
- Minimal cost per person - 70 cents/person/year
- Reduces the cost of dental treatment - for every dollar spent on fluoridation $38 is saved in oral health care (CDC)
- Provides both topical and systemic exposure
- Most effective way to reduce tooth decay
- Is safe!
- Benefits children and adults
- Provides lifelong benefits
- Is the fairest way for everyone in the community to benefit
- Requires no individual action or effort by those who will benefit - maximized potential compliance

Success of Water Fluoridation

World Health Organization

- "Water fluoridation in low fluoride-containing water supplies helps to maintain optimal dental tissue development & dental enamel resistance against caries attack during the entire life span.

- Fluoride in drinking water acts mainly through its retention in dental plaque & saliva. Frequent consumption of drinking water & products made with fluoridated water maintain intra-oral fluoride levels.

- People of all ages, including the elderly, benefit from community water fluoridation."

Success of Water Fluoridation

The Centers for Disease Control (CDC)

- CDC in 2005 in the United States stated that "Community water fluoridation has been one of 10 great public health achievements in the 20th century"
- According to the CDC, water fluoridation has made a significant contribution to the decline in dental caries

Success of Water Fluoridation

The U.S. Surgeon General

- The U.S. Surgeon General in 2000 stated that "Community water fluoridation, an effective, safe, and ideal public health measure, benefits individuals of all ages and socioeconomic strata"

Success of Water Fluoridation

FDI World Dental Federation

- “Over 50 years of extensive research throughout the world has consistently demonstrated the safety and efficacy of fluoride in preventing dental decay.
- The scientific basis for the use of fluoride and its safety has been accepted by numerous scientific bodies, expert groups and Government agencies.
- The use of fluoride has resulted in a substantial decline in the incidence and prevalence of dental decay and has improved the quality of life for millions of people.”

Success of Water Fluoridation

Canadian Dental Association

- The CDA (2005) states that “50 years of extensive research throughout the world has consistently demonstrated the safety and effectiveness of fluoride in the prevention of dental caries”

Water Fluoridation Exposure

- The CDC (2005) reports that 62% of the U.S. population receives fluoridated water
- Health Canada (2005) estimates that fluoridated water reaches approximately 40% of Canadians
- Health Canada estimates that fluoridated water reaches approximately 70% or 8.7 million

  Ontarians
- Ontario Ministry of the Environment (MOE) in Sept, 2000 recommended a water fluoridation level of 0.5-0.8mg/ml

Health Canada Santé Canada

April 2008

Findings and Recommendations of the Fluoride Expert Panel (January 2007)

Context:

As part of its review of the health effects of exposure to fluoride in drinking water, Health Canada convened a panel of experts in January 2007 to discuss this topic and to provide recommendations to ensure that exposure to fluoride remains below levels that could cause adverse effects (i.e., moderate and severe dental fluorosis) while achieving the public health benefit of preventing dental caries. Discussions were based on topic-specific literature reviews developed and presented by some of the invited experts.

The Expert Panel was asked to provide expert advice and to make recommendations to Health Canada and the Federal-Provincial-Territorial Committee on Drinking Water (CDW) regarding fluoride in drinking water. Advice was sought from the Expert Panel on five specific issues of concern:

- Total Daily Intake of Fluoride;
- Dental Fluorosis;
- Other Health Effects;
- Risk Assessment; and
- Drinking Water Fluoridation: Risks and Benefits

The Expert Panel reached a consensus on all key issues identified, and its main conclusions and recommendations to Health Canada and the Federal-Provincial-Territorial Committee on Drinking Water on each issue are provided below.

Expert Panel Members

- Steven M. Levy, Iowa College of Dentistry
- Christopher Clark, University of British Columbia
- Robert Tardif, Université de Montreal
- Michael Levy, Institut National de Santé Publique du Québec
- Jayanth Kumar, New York State Department of Health
- Albert Nantel, Institut National de Santé Publique du Québec

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The opinions expressed in this report are those of the Expert Panel and do not necessarily reflect the views of Health Canada.

Canada

www.hc-sc.gc.ca/ewh-semt/pubs/water-eau/2008-fluoride-fluorure/index-eng.php

Fluoride Expert Panel 2008 Recommendations

- The Maximum Acceptable Concentration (MAC) of 1.5 mg/L for fluoride in drinking water should be reaffirmed.

- Based on earlier and updated data, the current drinking water guideline(MAC) of 1.5 mg/L for fluoride is still unlikely to be a cause of moderate dental fluorosis in the Canadian population.

Fluoride Expert Panel 2008 Recommendations

- The current (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.

- To adopt a level of 0.7 mg/L as the optimal target concentration for fluoride in drinking water, which would prevent excessive intake of fluoride through multiple sources of exposure.

Fluoride Expert Panel 2008 Recommendations

Community drinking water fluoridation is still an effective public health method to reduce the prevalence of dental caries in the Canadian population.

Canadian Health Measures Survey 2007-2009

Peter Cooney, Chief Dental Officer, Health Canada 2011
www.fptdwg.ca/English/e-documents.html

- Statistics Canada collected data for the Canadian Health Measures Survey (CHMS) from about 6,000 people in 15 communities randomly selected across Canada between March 2007 and February 2009.

- The sample represents 97% of the Canadian population aged six to seventy-nine years old.

Canadian Health Measures Survey 2007-2009

- 57% of 6-11 year olds have or have had a cavity
- 59% of 12-19 year olds have or have had a cavity
- The average number of teeth affected by decay in children aged 6-11 and 12-19 years old is 2.5
- An estimated 2.26 million school days are lost annually due dental visits or dental sick days
- 96% of adults have or have had at least one cavity

Thank-you !

Joint Government of Canada Response to Environmental Petition No. 221 filed under Section 22 of the *Auditor General Act* Received November 19, 2007

Petition to Discontinue Water Fluoridation

March 18, 2008

50 Questions
24 Pages

Minister of Health and the Minister for the Federal Economic Development Initiative for Northern Ontario,
Minister of the Environment,
Minister of Indian Affairs and Northern Development and Federal Interlocutor for Métis and Non-Status Indians, and
Transport Canada

www.fptdwg.ca/assets/PDF/0804-JointGovernmentofCanadaresponse.pdf

Childhood Caries

- World Oral Health Report 2003, dental caries remains a major public health problem in most industrialized countries, affecting 60–90% of schoolchildren
- Prevalence of tooth decay is 42% in kindergarten and increases with age
- Affects 5 out of 6 adolescents
- 50% of children experience caries before the first grade in their primary teeth

Edelstein,B.: Public Health Rep 110: 522, 1995

Canadian Health Measures Survey 2007-2009

Canadian Health Measures Survey 2007-2009

Canadian Health Measures Survey 2007-2009

Comparisons with results from the United States

The United States' National Health and Nutrition Examination Survey (NHANES) of 2004 collected oral health information on its participants using very similar methods as the CHMS. NHANES is a reliable point of comparison for the Canadian data.

Indicator	National Health and Nutrition Examination Survey 2004 United States	Canadian Health Measures Survey 2009
% of children 6–11 years of age with Decayed, Missing, Filled Teeth (DMFT) of at least 1	21%	24%
Average DMFT count for children (6–11 years of age)	0.45	0.49
% of children 6–11 years of age with at least one sealant	31%	32%
Average number of sealants per child (6–11 years of age)	3.38	2.88
% of adolescents 12–19 years of age with a DMFT of at least 1	59%	59%
Average DMFT count on adolescents 12–19 years of age	2.55	2.49
% of adolescents 12–19 years of age with at least one sealant	38%	51%
Average number of sealants per adolescent (12–19 years of age)	5.10	3.50

Canadian and American children have very similar oral health indicators except Canadian adolescents have somewhat fewer cavities and fewer teeth with sealants.