

HCR

5



# ALASKA STATE LEGISLATURE

*Chair*  
STATE AFFAIRS

*Member*  
RESOURCES

*Member*  
HEALTH, EDUCATION AND SOCIAL SERVICES

*Member*  
WAYS AND MEANS



*Session:*  
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Juneau, Alaska 99801  
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Rep.Paul.Scaton@legis.state.ak.us

*Interim:*  
345 W. Sterling Highway  
Suite 102B  
Homer, Alaska 99603  
Phone 907-235-2921  
Fax 907-235-4008

**REPRESENTATIVE PAUL SEATON**  
House District 35

## Sponsor Statement HCR 5

HCR 5 encourages Alaskan communities to incorporate fluoride in their public water systems.

Fluoridated water has been shown to dramatically reduce dental carries, especially in children. Fluoride is one of the most efficient ways of providing cost-effective preventative dental health care. Every dollar spent on fluoridation saves \$37 in future dental expenses. Currently, all cities in Alaska with a population exceeding 30,000 have access to fluoridated water. The benefits of fluoridated water should be extended to all Alaskans.

HCR 5 requests that all new community water systems be engineered with the capacity for incorporating fluoride.

Tooth decay is a serious problem in Alaska, particularly in rural areas where access to dentists is not easily available. Poor dental health also puts a major burden on Medicaid/Medicare programs.

Fluoridating community water systems is an investment in Alaska's public health that would provide returns both in dental health and to the pocketbook. HCR 5 makes it clear that the state supports communities in taking this step to improve the dental health of their residents.

Last updated on: 1/23/06  
Bill version: 24-LS032/Y



# FISCAL NOTE

**STATE OF ALASKA**  
**2006 LEGISLATIVE SESSION**

Fiscal Note Number: 1  
 Bill Version: HCR 5  
 (H) Publish Date: 2/3/06

Revision Date/Time (Note if correction): \_\_\_\_\_ Dept. Affected: Dept of Environmental Conservation  
 Title: Fluoridation RDU: Environmental Health  
 Component: Drinking Water  
 Sponsor: Representative Paul Seaton  
 Requester: House Community & Regional Affairs Committee Component No. 2066

**Expenditures/Revenues (Thousands of Dollars)**

Note: Amounts do not include inflation unless otherwise noted below.

OPERATING EXPENDITURES	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012
Personal Services	0.0	0.0	0.0	0.0	0.0	0.0
Travel	0.0	0.0	0.0	0.0	0.0	0.0
Contractual	0.0	0.0	0.0	0.0	0.0	0.0
Supplies	0.0	0.0	0.0	0.0	0.0	0.0
Equipment	0.0	0.0	0.0	0.0	0.0	0.0
Land & Structures	0.0	0.0	0.0	0.0	0.0	0.0
Grants & Claims	0.0	0.0	0.0	0.0	0.0	0.0
Miscellaneous	0.0	0.0	0.0	0.0	0.0	0.0
<b>TOTAL OPERATING</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>

<b>CAPITAL EXPENDITURES</b>						
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<b>CHANGE IN REVENUES ( )</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
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**FUND SOURCE (Thousands of Dollars)**

FUND SOURCE	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012
1002 Federal Receipts	0.0	0.0	0.0	0.0	0.0	0.0
1003 GF Match	0.0	0.0	0.0	0.0	0.0	0.0
1004 GF	0.0	0.0	0.0	0.0	0.0	0.0
1005 GF/Program Receipts	0.0	0.0	0.0	0.0	0.0	0.0
1037 GF/Mental Health	0.0	0.0	0.0	0.0	0.0	0.0
Other (Specify Type--Do not abbreviate)	0.0	0.0	0.0	0.0	0.0	0.0
<b>TOTAL</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>

Estimate of any current year (FY2006) cost: 0.0

Mark this box (X) if funding for this bill is included in the Governor's FY 2007 budget proposal:

**POSITIONS**

POSITIONS	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012
Full-time	0	0	0	0	0	0
Part-time	0	0	0	0	0	0
Temporary	0	0	0	0	0	0

**ANALYSIS:** (Attach a separate page if necessary)

This House Concurrent Resolution will have no fiscal impact on DEC.

Prepared by: Kristin Ryan, Director Phone (907) 269-7644  
 Division: Environmental Conservation Date/Time 2/1/06 8:00 AM  
 Approved by: Kurt Fredriksson Date 2/1/2006  
 Agency: Department of Environmental Conservation

# FISCAL NOTE

**STATE OF ALASKA**  
**2006 LEGISLATIVE SESSION**

Fiscal Note Number: 2  
 Bill Version: HCR 5  
 (H) Publish Date: 2/3/06

Revision Date / Time (Note if correction): \_\_\_\_\_ Dept. Affected: Dept of Environmental Conservation  
 Title: Fluoridation RDU: Division of Water  
 Component: Water Quality  
 Sponsor: Representative Paul Seaton  
 Requester: House Community and Regional Affairs Committee Component No. 2062

**Expenditures/Revenues (Thousands of Dollars)**

Note: Amounts do not include inflation unless otherwise noted below.

OPERATING EXPENDITURES	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012
Personal Services						
Travel						
Contractual						
Supplies						
Equipment						
Land & Structures						
Grants & Claims						
Miscellaneous						
<b>TOTAL OPERATING</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>

<b>CAPITAL EXPENDITURES</b>						
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<b>CHANGE IN REVENUES ( )</b>						
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**FUND SOURCE (Thousands of Dollars)**

1002 Federal Receipts						
1003 GF Match						
1004 GF						
1005 GF/Program Receipts						
1037 GF/Mental Health						
Other (Specify Type--Do not abbreviate)						
<b>TOTAL</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>

Estimate of any current year (FY2006) cost: 0.0

Mark this box (X) if funding for this bill is included in the Governor's FY 2007 budget proposal:

**POSITIONS**

Full-time						
Part-time						
Temporary						

**ANALYSIS:** (Attach a separate page if necessary)

This resolution has no effect on Division of Water resources.

Prepared by: Lynn J. Tomich Kent Phone 269-6261  
 Division: Water Date/Time 2/1/06 2:30pm  
 Approved by: Kurt Fredriksson Date 2/1/2006  
 Agency: Department of Environmental Conservation

Support for HCR 5 and community water fluoridation from organizations/individuals included in your packet:

- Resolution, Oral Health America
- Resolution, Alaska State Medical Association
- Resolution, Alaska Public Health Association
- Resolution, Alaska State Dental Hygiene Association
- Resolution, Alaska Dental Society
- Resolution, American Academy of Pediatrics
- Resolution, Alaska Nurses Association
- Resolution, City of Port Lions
- Resolution, Bristol Bay Health Corporation
- Resolution, Alaska Primary Care Association
- Compendium, list of National and International organizations that Recognize the Public Health Benefits of Community Water Fluoridation
- Letter, Troy Ritter
- Letter, Alaska Native Tribal Health Consortium
- Letter, Community Health Services SE Alaska Regional Health Consortium
- Letter, Alaska Environmental Health Association'
- Letter, Yukon-Kuskokwim Health Corporation
- Letters of support from 7 Alaska dentists
- Letter, Kenai Kodiak Chapter of the Alaska Dental Society
- Letter, Alaska Area Native Health Service, Dept. of Health and Social Services, USA

Opposition to HCR 5

- Letters, two individuals
- Letter, dentist

**ORAL HEALTH AMERICA  
RESOLUTION IN SUPPORT OF  
COMMUNITY WATER FLUORIDATION TO IMPROVE ORAL HEALTH**

**WHEREAS**, dental tooth decay is recognized as a chronic disease, and the most common chronic disease found in children (1); and

**WHEREAS**, fluoride is a naturally occurring element, and the fluoride content of community water supplies is the single most safe and effective public health measure to prevent tooth decay and to improve oral health for a lifetime (2); and

**WHEREAS**, community water fluoridation is a public health measure that benefits individuals of all ages and socioeconomic groups, especially those without access to regular dental care; and

**WHEREAS**, the average yearly cost for a community to fluoridate its water is estimated at an average cost of \$0.50, with a range of \$0.12 - \$5.41 per person, depending mostly on the size of the community and labor costs (2); and

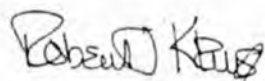
**WHEREAS**, the lifetime average cost per person represents less than one third of the charge for one dental restoration; and

**WHEREAS**, fluoridation of community water supplies is supported by over 90 professional health organizations including Oral Health America (2); and

**WHEREAS**, the Centers for Disease Control and Prevention has named water fluoridation as one of the ten greatest public health achievements during the 20<sup>th</sup> century (3) and 2005 marks the 60<sup>th</sup> anniversary of water fluoridation in the United States;

**THEREFORE BE IT RESOLVED**, that Oral Health America recognizes the public health benefits of community water fluoridation for preventing dental decay, and encourages Alaska communities to fluoridate water supplies to levels optimal to prevent tooth decay and promote optimal oral health.

**DONE AND DATED** this 27<sup>th</sup> day of January, in the year 2005 .



President and CEO, Oral Health America

**REFERENCES:**

- (1) U.S. Department of Health and Human Services, "Oral Health in America: A Report of the Surgeon General, October 2000.
- (2) American Dental Association, "Fluoridation Facts", 1999.
- (3) USDHHS, Centers for Disease Control and Prevention, "Achievements in Public Health, 1900-1999: Fluoridation of Drinking Water to Prevent Dental Caries", *MMWR*, 48(41), pp. 933-940, October 22, 1999



# ALASKA STATE MEDICAL ASSOCIATION

407 Laurel Street • Suite 1 • Anchorage, Alaska 99508 • (907) 562-2662



ADOPTED AS AMENDED BY THE ALASKA STATE MEDICAL ASSOCIATION HOUSE OF DELEGATES AT ITS ANNUAL MEETING IN VALDEZ, ALASKA JUNE 11, 1984

RESOLUTION NO. 84 - 5

SUBJECT: *Encouraging* PROMOTION OF UNIVERSAL ACCESS TO FLUORIDATION IN ALASKA

WHEREAS, dental caries is one of the most prevalent public health problems of Alaskans<sup>1</sup>, and

WHEREAS, health care expenditures for restoration of caries are very large, and

WHEREAS, fluoridation of public water supplies will reduce the incidence of caries by 50% on a reliable, safe and well-documented basis<sup>1-2</sup>; therefore

BE IT RESOLVED, that the Alaska State Medical Association calls for a statewide effort by appropriate State and federal agencies to encourage all Alaskan communities with public water systems implement central water fluoridation; and, for communities without public water systems, to assure community access to fluoridation techniques such as school-based fluoridation programs and fluoride drops; and

BE IT FURTHER RESOLVED, that the Alaska State Medical Association encourages the State of Alaska Department of Health and Social Services and Environmental Conservation to budget for and implement this plan.

- 
1. State Health Plan for Alaska 5, Statewide Health Coordinating Council and Division of Planning, Policy, and Program Evaluation, DHSS, January, 1984.
  2. A Two-Part Report on Fluoridation, Consumer Reports, July-August 1978 Consumers Union of United States, Inc., Mount Vernon, NY.

DISTRIBUTION: Dental Assoc.  
DHSS  
Dept. of Environmental Conservation  
Governor

ALASKA STATE MEDICAL ASSOCIATION

Resolution No. 12-71

ADOPTED UNANIMOUSLY  
June 11, 1971

SUBJECT: *favoring* Fluoridation of water

*Public Health*

SUBMITTED BY: Legislative Committee, at request of  
Alaska Dental Society

RESOLVED, that the Alaska State Medical Association favors fluoridation of public water supplies wherever water does not naturally contain fluoride sufficient to prevent tooth decay.

☆  
☆☆☆☆ ALASKA PUBLIC HEALTH ASSOCIATION

Committed To Advancing Alaska's Public Health Since 1978



ALPHA Resolution 2004-1

**RESOLUTION REAFFIRMING SUPPORT FOR  
COMMUNITY WATER FLUORIDATION TO IMPROVE ORAL HEALTH**

**WHEREAS**, dental tooth decay is recognized as a chronic disease, and the most common chronic disease found in children (1); and

**WHEREAS**, fluoride is a naturally occurring element, and the fluoride content of community water supplies is the single most safe and effective public health measure to prevent tooth decay and to improve oral health for a lifetime (2); and

**WHEREAS**, community water fluoridation is a public health measure that benefits individuals of all ages and socioeconomic groups, especially those without access to regular dental care; and

**WHEREAS**, the average yearly cost for a community to fluoridate its water is estimated at an average cost of \$0.50, with a range of \$0.12 - \$5.41 per person, depending mostly on the size of the community and labor costs (2); and

**WHEREAS**, the lifetime average cost per person represents less than one-third of the charge for one dental restoration; and

**WHEREAS**, fluoridation of community water supplies is supported by over 90 professional health organizations including the American Public Health Association (2); and

**WHEREAS**, the Centers for Disease Control and Prevention has named water fluoridation as one of the ten greatest public health achievements during the 20<sup>th</sup> century (3), ALPHA has been on record of supporting community water fluoridation in a past resolution, and 2005 marks the 60<sup>th</sup> anniversary of water fluoridation in the United States;

**THEREFORE BE IT RESOLVED**, that the Alaska Public Health Association reaffirms the association's recognition of the public health benefits of community water fluoridation for preventing dental decay, and encourages Alaska communities to fluoridate water supplies to levels optimal to prevent tooth decay and promote optimal oral health. Further, be it resolved that the Alaska Public Health Association submit a letter defining the organization position on community water fluoridation to the Juneau Fluoridation Task Force that is meeting at this time and follow similar actions in any future community and/or legislative forums discussing the merits of water fluoridation in Alaska.

Approved by the ALPHA Membership at the November 30, 2004 Annual meeting

**REFERENCES:**

- (1) U.S. Department of Health and Human Services, "Oral Health in America: A Report of the Surgeon General, October 2000.
- (2) American Dental Association, "Fluoridation Facts", 1999.
- (3) USDHHS, Centers for Disease Control and Prevention, "Achievements in Public Health, 1900-1999: Fluoridation of Drinking Water to Prevent Dental Caries", *MMWR*, 48(41) pp. 933-940, October 22, 1999



**ALASKA STATE DENTAL HYGIENE ASSOCIATION  
RESOLUTION IN SUPPORT OF  
COMMUNITY WATER FLUORIDATION TO IMPROVE ORAL HEALTH**

**WHEREAS**, dental tooth decay is recognized as a chronic disease, and the most common chronic disease found in children (1); and

**WHEREAS**, fluoride is a naturally occurring element, and the fluoride content of community water supplies is the single most safe and effective public health measure to prevent tooth decay and to improve oral health for a lifetime (2); and

**WHEREAS**, community water fluoridation is a public health measure that benefits individuals of all ages and socioeconomic groups, especially those without access to regular dental care; and

**WHEREAS**, the average yearly cost for a community to fluoridate its water is estimated at an average cost of \$0.50, with a range of \$0.51 - \$5.41 per person, depending mostly on the size of the community and labor costs (2); and <sup>12</sup>

**WHEREAS**, the lifetime average cost per person represents less than one third of the charge for one dental restoration; and

**WHEREAS**, fluoridation of community water supplies is supported by over 90 professional health organizations including the American Dental Hygiene Association; and

**WHEREAS**, the Centers for Disease Control and Prevention has named water fluoridation as one of the ten greatest public health achievements during the 20<sup>th</sup> century (3) and 2005 marks the 60<sup>th</sup> anniversary of water fluoridation in the United States;

**THEREFORE BE IT RESOLVED**, that the Alaska State Dental Hygiene Association recognizes the public health benefits of community water fluoridation for preventing dental decay, and encourages Alaska communities to fluoridate water supplies to levels optimal to prevent tooth decay and promote optimal oral health.

**DONE AND DATED** this 22<sup>nd</sup> day of November, in the year 2004.

Signed by the President for the Board of Directors and approved by the membership.

  
\_\_\_\_\_  
Royann Royer RDH MPH, President ASDHA

**REFERENCES:**

- (1) U.S. Department of Health and Human Services, "Oral Health in America: A Report of the Surgeon General, October 2000.
- (2) American Dental Association, "Fluoridation Facts", 1999.
- (3) USDHHS, Centers for Disease Control and Prevention, "Achievements in Public Health, 1900-1999: Fluoridation of Drinking Water to Prevent Dental Caries", *MMWR*, 48(41), pp. 933-940, October 22, 1999



## Alaska Dental Society, Inc.

9170 Jewel Lake Road, Suite 203  
Anchorage, Alaska 99502-5390  
(907) 563-3003 • FAX: 563-3009  
akdental@alaska.net

### RESOLUTION IN SUPPORT OF COMMUNITY WATER FLUORIDATION TO IMPROVE ORAL HEALTH

**WHEREAS**, dental tooth decay is recognized as a chronic disease, and the most common chronic disease found in children (1); and

**WHEREAS**, fluoride is a naturally occurring element, and the fluoride content of community water supplies is the single most safe and effective public health measure to prevent tooth decay and to improve oral health for a lifetime (2); and

**WHEREAS**, community water fluoridation is a public health measure that benefits individuals of all ages and socioeconomic groups, especially those without access to regular dental care; and

**WHEREAS**, the average yearly cost for a community to fluoridate its water is estimated at an average cost of \$0.50, with a range of \$0.12 - \$5.41 per person, depending mostly on the size of the community and labor costs (2); and

**WHEREAS**, the lifetime average cost per person represents less than one third of the charge for one dental restoration; and

**WHEREAS**, fluoridation of community water supplies is supported by over 90 professional health organizations including the American Dental Association (2); and

**WHEREAS**, the Centers for Disease Control and Prevention has named water fluoridation as one of the ten greatest public health achievements during the 20th century (3) and 2005 marks the 60th anniversary of water fluoridation in the United States;

**THEREFORE BE IT RESOLVED**, that the Alaska Dental Society recognizes the public health benefits of community water fluoridation for preventing dental decay, and encourages Alaska communities to fluoridate water supplies to levels optimal to prevent tooth decay and promote optimal oral health.

**APPROVED BY UNANIMOUS VOTE** this Eleventh day of December, in the year 2004

  
James R. Towle  
Executive Director

#### **REFERENCES:**

- (1) U.S. Department of Health and Human Services, "Oral Health in America: A Report of the Surgeon General, October 2000.
- (2) American Dental Association, "Fluoridation Facts", 1999.
- (3) USDHHS, Centers for Disease Control and Prevention, "Achievements in Public Health, 1900-1999: Fluoridation of Drinking Water to Prevent Dental Caries", *MMWR*, 48(41), pp. 933-940, October 22, 1999

Years of Caring  
1930-2005

# American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN™



## Alaska Chapter

### ALASKA CHAPTER of the AMERICAN ACADEMY OF PEDIATRICS RESOLUTION IN SUPPORT OF COMMUNITY WATER FLUORIDATION TO IMPROVE ORAL HEALTH

#### Alaska Chapter Executive Committee

##### President

Jodyne L. Butto, MD, FAAP  
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Phone: 907/562-2420  
Fax: 907/583-1170  
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Phone: 907/729-5471  
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Phone: 907/563-3026  
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E-mail: lilylou@mindspring.com

##### Chapter Executive Director

Janice Tower  
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Phone: 907/346-8028  
Fax: 907/346-8028  
E-mail: jtower@alaska.com

##### Chapter Web site

[www.aap.alaska.org](http://www.aap.alaska.org)

##### AAP Headquarters

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Phone: 847/434-4000  
Fax: 847/434-8000  
E-mail: [mdsdocs@aap.org](mailto:mdsdocs@aap.org)  
[www.aap.org](http://www.aap.org)

**WHEREAS**, dental tooth decay is recognized as a chronic disease, and the most common chronic disease found in children (1); and

**WHEREAS**, fluoride is a naturally occurring element, and the fluoride content of community water supplies is the single most safe and effective public health measure to prevent tooth decay and to improve oral health for a lifetime (2); and

**WHEREAS**, community water fluoridation is a public health measure that benefits individuals of all ages and socioeconomic groups, especially those without access to regular dental care; and

**WHEREAS**, the annual cost for a U.S. community to fluoridate its water is estimated to range from approximately \$0.50 per person in large communities to approximately \$3.00 per person in small communities, depending on the type of fluoride compound used, its costs of transportation and storage, and the equipment used to add and monitor fluoride additives (2); and

**WHEREAS**, the lifetime average cost per person represents less than one third of the charge for one dental restoration; and

**WHEREAS**, fluoridation of community water supplies is supported by over 90 professional health organizations including the American Academy of Pediatrics (2); and

**WHEREAS**, the Centers for Disease Control and Prevention has named water fluoridation as one of the ten greatest public health achievements during the 20<sup>th</sup> century (3) and 2005 marks the 60<sup>th</sup> anniversary of water fluoridation in the United States;

**THEREFORE BE IT RESOLVED**, that the Alaska Chapter of the American Academy of Pediatrics recognizes the public health benefits of community water fluoridation for preventing dental decay, and encourages Alaska communities to fluoridate water supplies to levels optimal to prevent tooth decay and promote optimal oral health.

**DONE AND DATED** this 30th day of January in the year 2006 .

**SIGNED BY:**

Jodyne L. Butto, MD, FAAP  
President, American Academy of Pediatrics, Alaska Chapter

#### **REFERENCES:**

- (1) U.S. Department of Health and Human Services, "Oral Health in America: A Report of the Surgeon General, October 2000.
- (2) American Dental Association, "Fluoridation Facts", 2005.
- (3) USDHHS, Centers for Disease Control and Prevention, "Achievements in Public Health, 1900-1999: Fluoridation of Drinking Water to Prevent Dental Caries", *MMWR*, 48(41), pp. 933-940, October 22, 1999



907-274-0827  
// 907-272-0292  
3701 E. Tudor Rd, Suite 208  
Anchorage, AK 99507  
www.aknurse.org

**ALASKA NURSES ASSOCIATION  
RESOLUTION IN SUPPORT OF  
COMMUNITY WATER FLUORIDATION TO IMPROVE ORAL HEALTH**

**WHEREAS**, dental tooth decay is recognized as a chronic disease, and the most common chronic disease found in children (1); and

**WHEREAS**, fluoride is a naturally occurring element, and the fluoride content of community water supplies is the single most safe and effective public health measure to prevent tooth decay and to improve oral health for a lifetime (2); and

**WHEREAS**, community water fluoridation is a public health measure that benefits individuals of all ages and socioeconomic groups, especially those without access to regular dental care; and

**WHEREAS**, the annual cost for a U.S. community to fluoridate its water is estimated to range from approximately \$0.50 per person in large communities to approximately \$3.00 per person in small communities, depending on the type of fluoride compound used, its costs of transportation and storage, and the equipment used to add and monitor fluoride additives (2); and

**WHEREAS**, the lifetime average cost per person represents less than one third of the charge for one dental restoration; and

**WHEREAS**, fluoridation of community water supplies is supported by over 90 professional health organizations (2); and

**WHEREAS**, the Centers for Disease Control and Prevention has named water fluoridation as one of the ten greatest public health achievements during the 20<sup>th</sup> century (3) and 2005 marks the 60<sup>th</sup> anniversary of water fluoridation in the United States;

**THEREFORE BE IT RESOLVED**, that the ALASKA NURSES ASSOCIATION recognizes the public health benefits of community water fluoridation for preventing dental decay, and encourages Alaska communities to fluoridate water supplies to levels optimal to prevent tooth decay and promote optimal oral health.

**DONE AND DATED** this 16<sup>th</sup> day of December, in the year 2005.

Dianne O'Connell, Executive Director

**REFERENCES:**

- (1) U.S. Department of Health and Human Services, "Oral Health in America: A Report of the Surgeon General, October 2000.
- (2) American Dental Association, "Fluoridation Facts", 2005.
- (3) USDHHS, Centers for Disease Control and Prevention, "Achievements in Public Health, 1900-1999: Fluoridation of Drinking Water to Prevent Dental Caries", *MMWR*, 48(41), pp. 933-940, October 22, 1999

**CITY OF PORT LIONS**

**RESOLUTION # 05-03-R**

**A RESOLUTION OF THE CITY OF PORT LIONS  
AFFIRMING SUPPORT FOR  
COMMUNITY WATER FLUORIDATION TO IMPROVE ORAL HEALTH**

**WHEREAS**, The Port Lions City Council, hereinafter called the Council, is the governing body of the City of Port Lions; and

**WHEREAS**, The Port Lions City Council has recognized that there is overall community support for the fluoridation of The Port Lions Public Water System; and

**WHEREAS**, The Council Recognizes that dental tooth decay is a chronic disease, and the most common chronic disease found in rural Alaskan children; and

**WHEREAS**, Fluoride is a naturally occurring element, and the fluoride content of community water supplies is the single most safe and effective public health measure to prevent tooth decay and to improve oral health for a lifetime; and

**WHEREAS**, Community water fluoridation is a public health measure that benefits individuals of all ages and socioeconomic groups, especially those without access to regular dental care; and

**WHEREAS**, Fluoridation of community water supplies is supported by over 90 professional health organizations including the American Public Health Association, American Dental Association, World Health Organization and the American Medical Association; and

**WHEREAS**, The Centers for Disease Control and Prevention has named water fluoridation as one of the ten greatest public health achievements during the 20<sup>th</sup> century and 2005 marks the 60<sup>th</sup> anniversary of water fluoridation in the United States;

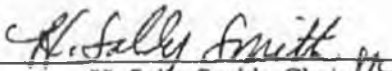
**THEREFORE BE IT RESOLVED**, That the City of Port Lions recognizes the public health benefits of community water fluoridation for preventing dental decay, and is committed to the safe and effective practice of water fluoridation as defined by the Centers for Disease Control and Prevention's Engineering and Administrative Recommendations for Water Fluoridation.

**NOW THEREFORE BE IT RESOLVED**, That the City Council of Port Lions Unanimously supports the Fluoridation of the Port Lions Public Water System.

1-13-05  
Date of Adoption

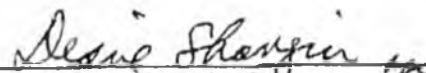
Marvin Bartleson Sr.  
Port Lions City Mayor:  
Marvin Bartleson Sr.  
Kathryn Adkins  
ATTEST: City Clerk  
Kathryn Adkins

**ADOPTED** at a duly noticed meeting of the Executive Committee of Bristol Bay Area Health Corporation at a meeting held on August 17, 2005 at which a quorum was present.

  
\_\_\_\_\_  
H. Sally Smith, Chair

**CERTIFICATION**

I, the undersigned Secretary of the Bristol Bay Area Health Corporation, do hereby certify that the foregoing resolution was duly passed by the Executive Committee of the Bristol Bay Area Health Corporation on August 17, 2005 and that such resolution remains in full force and effect and has not been amended or rescinded.

  
\_\_\_\_\_  
Diane Shangin, Secretary



Bristol Bay Area Health Corporation  
6000 Kanakalik Road  
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Dillingham, AK 99576  
(907) 842-5201  
800-478-5201  
FAX (907) 842-9354

**Bristol Bay Area Health Corporation  
PO Box 130**

**DILLINGHAM, ALASKA 99576  
(907) 842-5201**

Resolution JCC 05-01

**Resolution Affirming Support for Community Water Fluoridation  
To Improve Oral Health**

*Bristol Bay Area Health Corporation is a tribal organization representing 34 villages in Southwest Alaska:*

- Aiaknagik
- Chignik Bay
- Chignik Lagoon
- Chignik Lake
- Clark's Point
- Dillingham
- Egegik
- Ekuk
- Ekwak
- Goodnews Bay
- Iglugig
- Iliamna
- Ivanof Bay
- Kanatak
- King Salmon
- Knugank
- Kokhanok
- Koliganuk
- Levelock
- Manokotak
- Naknek
- Now Stuyahok
- Nawhalen
- Nondalton
- Pedro Bay
- Perryville
- Pilot Point
- Platinum
- Port Helden
- Portage Creek
- South Naknek
- Togiak
- Twin Hills
- Ugashik

**Whereas,**

Dental tooth decay is recognized as a chronic disease, and the most common chronic disease found in children (1); and

**Whereas,**

Fluoride is naturally occurring element, and the fluoride content of community water supplies is the single most safe and effective public health measure to prevent tooth decay and to improve oral health for a lifetime (2); and

**Whereas,**

Community water fluoridation is public health measure that benefits individuals of all ages and socioeconomic groups, especially those without access to regular dental care; and,

**Whereas,**

The average yearly cost for a community to fluoridate its water is estimated at an average cost of \$0.50, with a range of \$0.51 - \$5.41 per person (2); and

**Whereas,**

The lifetime average cost per person represents less than one third of the charge for one dental restoration; and

**Whereas,**

Fluoridation of community water supplies is supported by over 90 professional health organizations including the American Public Health Association, American Dental Association, World Health Organization and the American Medical Association (2); and

**Whereas,**

The Centers for Disease Control and Prevention has named water fluoridation as one of the ten greatest public health achievements during the 20<sup>th</sup> century (3), and 2005 marks the 60<sup>th</sup> anniversary of water fluoridation in the United States.

**THEREFORE BE IT RESOLVED,** that the Board of Directors of the Bristol Bay Area Health Corporation recognizes the public health benefits of community water fluoridation for preventing dental decay, and is committed to the safe and effective practice of water fluoridation as defined by the State of Alaska Oral Health Program.

*To promote health  
with competence,  
a caring attitude &  
cultural sensitivity*



**Alaska Primary Care Association, Inc.**  
**903 West Northern Lights, Suite 200**  
**Anchorage, Alaska 99503**  
**Phone: (907) 929-2722**  
**Fax: (907) 929-2734**

**Alaska Primary Care Association**  
**Board of Directors**

**RESOLUTION 2006-03**

**Title: Support of Community Water Fluoridation to Improve Oral Health (HCR 5)**

**WHEREAS**, dental tooth decay is recognized as a chronic disease, and the most common chronic disease found in children (1); and

**WHEREAS**, fluoride is a naturally occurring element, and the fluoride content of community water supplies is the single most safe and effective public health measure to prevent tooth decay and to improve oral health for a lifetime (2); and

**WHEREAS**, community water fluoridation is a public health measure that benefits individuals of all ages and socioeconomic groups, especially those without access to regular dental care; and

**WHEREAS**, the annual cost for a U.S. community to fluoridate its water is estimated to range from approximately \$0.50 per person in large communities to approximately \$3.00 per person in small communities, depending on the type of fluoride compound used, its costs of transportation and storage, and the equipment used to add and monitor fluoride additives (2); and

**WHEREAS**, the lifetime average cost per person represents less than one third of the charge for one dental restoration; and

**WHEREAS**, fluoridation of community water supplies is supported by over 90 professional health organizations (2); and

**WHEREAS**, the Centers for Disease Control and Prevention has named water fluoridation as one of the ten greatest public health achievements during the 20<sup>th</sup> century (3) and 2005 marks the 60<sup>th</sup> anniversary of water fluoridation in the United States;

**THEREFORE BE IT RESOLVED**, that the Alaska Primary Care Association recognizes the public health benefits of community water fluoridation for preventing dental decay; encourages Alaska communities to fluoridate water supplies to levels optimal to prevent tooth decay and promote optimal oral health; and supports legitimate and appropriate efforts necessary by its staff

and members to ensure the passage of HCR 5 Fluoridation before the Alaska State Legislature, Second Session.

SUBMITTED BY: Shelley Hughes, APCA Policy Analyst

DATE: February 2, 2006

DONE AND DATED this 3 day of February, in the year 2006.

SIGNED BY \_\_\_\_\_

*Joan Fisher*

Joan Fisher, APCA Board President

References:

- (1) U.S. Department of Health and Human Services, "Oral Health in America: A Report of the Surgeon General, October 2000."
- (2) American Dental Association, "Fluoridation Facts", 2005
- (3) USDHHS, Centers for Disease Control and Prevention, "Achievements in Public Health, 1900-1999: Fluoridation of Drinking Water to Prevent Dental Caries", MMWR, 48(41), pp. 933-940, October 22, 1999

## Compendium

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"National and International Organizations that Recognize  
the Public Health Benefits of Community Water  
Fluoridation for Preventing Dental Decay."

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Academy of Dentistry International  
Academy of General Dentistry  
Academy of Sports Dentistry  
Alzheimer's Association  
American Academy of Allergy, Asthma and Immunology  
American Academy of Family Physicians  
American Academy of Oral and Maxillofacial Pathology  
American Academy of Pediatrics  
American Academy of Pediatric Dentistry  
American Academy of Periodontology  
American Association for the Advancement of Science  
American Association for Dental Research  
American Association of Community Dental Programs  
American Association of Dental Schools  
American Association of Endodontists  
American Association of Oral and Maxillofacial Surgeons  
American Association of Orthodontists  
American Association of Public Health Dentistry  
American Cancer Society  
American College of Dentists  
American College of Physicians — American Society of  
Internal Medicine  
American College of Prosthodontists  
American Council on Science and Health  
American Dental Assistants Association  
American Dental Association  
American Dental Hygienists' Association  
American Dietetic Association  
American Federation of Labor and Congress  
of Industrial Organizations  
American Hospital Association  
American Medical Association  
American Nurses Association  
American Osteopathic Association  
American Pharmaceutical Association  
American Public Health Association  
American School Health Association  
American Society of Clinical Nutrition  
American Society for Dentistry for Children  
American Society for Nutritional Sciences  
American Student Dental Association  
American Veterinary Medical Association  
American Water Works Association  
Association for Academic Health Centers  
Association of Maternal and Child Health Programs  
Association of State and Territorial Dental Directors  
Association of State and Territorial Health Officials  
British Dental Association  
British Fluoridation Society  
British Medical Association  
Canadian Dental Association  
Canadian Dental Hygienists Association  
Canadian Medical Association  
Canadian Nurses Association  
Canadian Paediatric Society  
Canadian Public Health Association  
Chocolate Manufacturers Association  
Consumer Federation of America  
Delta Dental Plans Association  
European Organization for Caries Research  
FDI World Dental Federation  
Federation of Special Care Organizations in Dentistry  
Academy of Dentistry for Persons with Disabilities  
American Association of Hospital Dentists  
American Association for Geriatric Dentistry  
Health Insurance Association of America  
Hispanic Dental Association  
International Association for Dental Research  
International Association for Orthodontics  
International College of Dentists  
Institute of Medicine  
National Academy of Sciences  
National Alliance for Oral Health  
National Association of County and City Health Officials  
National Association of Dental Assistants  
National Confectioners Association  
National Council Against Health Fraud  
National Dental Assistants Association  
National Dental Association  
National Dental Hygienists' Association  
National Down Syndrome Congress  
National Down Syndrome Society  
National Foundation of Dentistry for the Handicapped  
National Kidney Foundation  
National PTA  
National Research Council  
Society of American Indian Dentists  
The Dental Health Foundation (of California)  
US Department of Defense  
US Department of Veterans Affairs  
US Public Health Service  
Centers for Disease and Prevention (CDC)  
Health Resources and Services Administration (HRSA)  
Indian Health Service (IHS)  
National Institute of Dental and Craniofacial Research  
(NIDCR)  
World Federation of Orthodontists  
World Health Organization

January 19, 2006

Tom Anderson, Representative  
Alaska House of Representatives  
State Capital, Room 408  
Juneau, AK 99801-1182

Dear Representative Anderson:

I am writing in support of House Concurrent Resolution 5 (HCR 5), Support for Community Water Fluoridation. As a father, public health professional and district 19 constituent, I feel that passage of HCR 5 would improve the health status of Alaskans. Most importantly, HCR 5 would not require communities to fluoridate their community water supply, but would increase opportunities for cooperation among out state's many public health entities.

As you may know, water fluoridation was recently recognized by the Center's for Disease Control and Prevention as *One of the Ten Greatest Public Health Achievements in the 20<sup>th</sup> Century*. Over sixty years of scientific research has proven water fluoridation to be both safe and effective. I hope you will support HCR 5. Please call me at (907) 332-0289 with any questions.

Sincerely,



Troy L. Ritter

cc: Representative Paul Seaton, HCR 5 Sponsor



Alaska Native  
Tribal Health Consortium

Administration 4000 Ambassador Drive Anchorage, Alaska 99508 Phone (907) 729-1900 Fax: (907) 729-1901 www.anthc.org

January 19, 2006

Paul Seaton, Representative  
Alaska House of Representatives  
State Capital, Room 102  
Juneau, AK 99801-1182

Dear Representative Seaton:

I am writing in support of House Concurrent Resolution 5 (HCR 5), Support for Community Water Fluoridation. The Alaska Native Tribal Health Consortium (ANTHC) strongly endorses safe and effective community water fluoridation. Passage of HCR 5 would help align state, federal and tribal efforts around this proven public health initiative.

The ANTHC is a multi-faceted nonprofit organization dedicated to providing Alaska Natives with the highest quality health services. With an annual budget of nearly \$300 million, ANTHC is the largest tribally managed health organization in the United States. As such, we consider water fluoridation to be an important tool in the advancement of Alaska Native health. It has been shown that adjusting the natural fluoride concentration of drinking water can reduce dental disease by up to 60 percent. There are also thousands of studies which show that optimal fluoridation does not lead to other undesirable health consequences.

I hope you will support HCR 5. You may contact Troy Ritter, ANTHC's fluoride program coordinator with questions about water fluoridation and Alaska Native health. Mr. Ritter can be reached at (907) 729-4290. Thank you.

Sincerely,

A handwritten signature in black ink, appearing to read "Paul Sherry". The signature is fluid and cursive, written over a light-colored background.

Paul Sherry  
Chief Executive Officer

cc: Alaska Oral Health Work Group  
Alaska Native Health Board



# COMMUNITY HEALTH SERVICES

SouthEast Alaska Regional Health Consortium

222 Tongass Drive, Sitka, AK 99835  
907 966-8710 • www.searhc.org

January 20, 2006

Peggy Wilson, Representative  
Alaska House of Representatives  
State Capital, Room 108  
Juneau, AK 99801-1182

Dear Representative Wilson:

I am writing in support of House Concurrent Resolution 5 (HCR 5), Support for Community Water Fluoridation. The South East Alaska Regional Health Corporation's (SEARHC) Office of Environmental Health supports and promotes the safe and effective use of water fluoridation. While passage of HCR 5 would not require communities to fluoridate their water supply, this resolution would help align state, federal and tribal efforts around this proven public health initiative.

The fluoridation of public water systems is described as one of the "Ten Great Public Health Achievements in the United States, 1900-1999". The Center for Disease Control and Prevention states that "Fluoridation of drinking water began in 1945 and in 1999 reaches an estimated 144 million persons in the United States. Fluoridation safely and inexpensively benefits both children and adults by effectively preventing tooth decay, regardless of socioeconomic status or access to care. Fluoridation has played an important role in the reductions in tooth decay (40%-70% in children) and of tooth loss in adults (40%-60%)".

Alaskans have much to gain with the access to optimally fluoridated water. For example, it is estimated that 60 percent of Alaskan Natives lack access to dental services and Alaskan Native children suffer three to four times more dental decay than the US average. In addition the safety and effectiveness of water fluoridation have been re-evaluated frequently, and no credible evidence supports an association between fluoridation and any adverse health condition.

I hope you will support HCR 5 as a means of improving the health of all Alaskans. You may contact me at (907) 966-8741 with questions about water fluoridation or HCR 5. Thank you.

Sincerely,

Tom Fazzini, RS, MPH, Environmental Health Director, SEARHC

cc: Representative Paul Seaton, HCR 5 Sponsor

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*Your Partner in Health*

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*Your Partner in Health*

JAN-27-2006 FRI 04:42 PM ANTHC, DEHE  
JAN-23-2006 MON 12:08 PM COMM ENVIR SERVICES  
Jan 19 2006 6:25PM US EPA

FAX NO. 9077294090  
FAX NO. 807 7283659  
907 271 3424

P. 03  
P. 01

P. 2



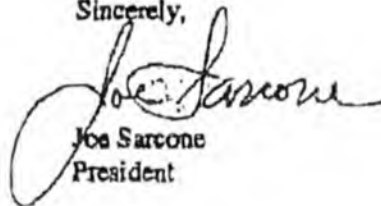
## The Alaska Environmental Health Association

January 19, 2006

Representatives of the Alaska State Legislature:

Access to regular dental care poses a problem for many Alaskans and presents a considerable public health challenge. Community water fluoridation is the single most effective public health measure to improve oral health and especially benefits those without access to regular dental care. The fluoridation of community water supplies is supported by the American Dental Association, the National Environmental Health Association, the U.S. Public Health Service, and the American Medical Association. The Alaska Environmental Health Association supports fluoridation in communities with the capability to safely fluoridate water to the benefit of all socioeconomic groups in those communities.

Sincerely,



Joe Sarcone  
President

Alaska Environmental Health Association  
1040 C Street  
Anchorage, AK 99501

(907) 677-8707



# YUKON-KUSKOKWIM HEALTH CORPORATION

"Working Together to Achieve Excellent Health"

January 23, 2006

Honorable Paul Seaton  
Alaska House of Representatives  
Capitol, Room 102  
Juneau, Alaska 99801-1182

Dear Representative Seaton:

On behalf of the Yukon-Kuskokwim Health Corporation I thank you for your efforts to improve the dental health of Alaskans, through your sponsorship of House Committee Resolution 5, "*Support for Community Water Fluoridation.*"

Your Resolution clearly describes the public health impacts of dental decay, and the Yukon-Kuskokwim Health Corporation is in full agreement. Our Dental Department sees cases of serious juvenile tooth decay on a daily basis.

Currently only four community water systems on the Yukon-Kuskokwim Delta are fluoridated. I hope a Legislative Resolution will encourage more of our communities to recognize the benefits of safe and effective drinking water fluoridation.

Please feel free to display this letter to your colleagues as you seek passage of House Committee Resolution 5.

Sincerely,  
YUKON-KUSKOKWIM HEALTH CORPORATION



Gene Beltola  
President and CEO

William J. Marley, DDS  
183 West Bayview Ave  
Homer, Alaska 99603  
907-235-8987



Compass Editorial  
Anchorage Daily News

As a practicing dentist for 37 years in Alaska, I know that by far one of the most disappointing and discouraging encounters for a dentist is to examine an Alaskan youth whose oral health is so poor you know that even with optimal restoration and ongoing care this child's future will be severely hindered by the impact of their dental disease. Their ability to eat, to communicate and as well their self esteem will be compromised for the rest of their life.

As the Alaska Dental Society's representative on the Alaska Oral Health Work Group I must express with great concern, and some embarrassment, the current oral health of many of our Alaskan communities. In 1992 Alaska had 120 community water supplies with optimally adjusted water fluoridation. Today that number is less than 37. Current scientifically accepted research demonstrates that fluoridation of community water supplies reduces dental caries (decay) by 18 to 38 percent. With 3 to 4 times the average rate of decay most Alaskan Natives would most certainly realize even a greater benefit.

A recent study in Georgia showed that for every dollar invested in community water fluoridation \$18 was saved. In a Louisiana study involving Medicaid-eligible children the cost of dental care was approximately twice as high in communities without as with fluoridated water. A recent Anchorage Daily News article indicated that 1/2 of all the children in the Bethel area were treated via general anesthesia for their dental care, a very costly treatment regimen. At Anchorage Native Medical Center (ANMC) it is reported there were over 600 cases of general anesthesia for dental treatment last year alone. In a great number of these cases patients are flown to treatment destinations in the company of a parent at great expense. During 2004 Alaska spent \$19.3 million on Medicaid and Denali dental care alone.

While there is clear economic reasoning for fluoridation there are also 60 years of history which factually substantiates its efficacy as well as safety. The discovery of fluoride as a health benefit was made as the result of its naturally occurring existence in community water supplies.

The American Dental Association (ADA) cites over 35, peer reviewed scientific articles and there are over 90 national and international health organizations that recognize the public health benefits of fluoridation for preventing dental decay. Forty-two of the largest fifty cities in the United States have fluoridated water supplies. Fifty percent of Alaskans benefit already from fluoridation but residents in most smaller communities do not. A past Gallop poll indicated that 78-percent of our country supports this positive preventive health benefit.

Alaskan organizations that support community water fluoridation include the Alaska Public Health Association, Alaska Dental Society, Alaska Medical Society, Alaska Dental Hygiene Society, Alaska Department of Health and Social Services. Support of Community Water Fluoridation is part of the Healthy Alaskan 2010 document and the All Alaska Pediatric Partnership.

Rep. Paul Seaton has submitted House Concurrent Resolution (HCR)-5 Supporting the Efficacy and Safety of Fluoridation of Community Water Supplies. This resolution simply endorses this health benefit but does not mandate fluoridation anywhere in our State.

Those who benefit most from this lifelong preventive health measure are the developing bodies of our children who, of course, are unable to vote. It is only through *our leadership* that this measure can be passed *for their benefit*. Passage of HCR-5 will be of no cost to the State of Alaska. However, it will cause the State agencies to function and perform in such a way that there is uniformity, encouragement and safety in the implementation of this most valuable health benefit.

If this resolution gives a community the added incentive to fluoridate their community water supplies they can look forward to their children having a significantly reduced disease rate, and a significantly reduced cost of care (50% less in many cases). These children will be much more likely to feel free and confident to smile, talk, eat and have the esteem to feel they are equal to their peers. People who have their natural teeth even have a greater life expectancy.

The leadership of Alaska clearly has the responsibility to support HCR-5 and cause this positive health measure to move forward.

William J. Marley, DDS.

**Katie Shows**

---

**From:** BYuknis@aol.com:  
**Sent:** Wednesday, February 01, 2006 2:07 AM  
**To:** Katie Shows  
**Subject:** HOUSE CONCURRENT RESOLUTION #5

To Katie Shows, Legislative Assistant to Rep Paul Seaton

Hello,

I am currently a practicing dentist in the communities of Wasilla and Anchorage. I feel strongly that this resolution should be passed for I have seen the effect on the teeth of people without fluoridation versus those who have fluoridation.

Thank-you,

Birch A Yuknis DDS

(907) 333-9591

## Katie Shows

---

From: william fell [williamfell@gci.net]  
Sent: Wednesday, February 01, 2006 12:42 AM  
To: Katie Shows  
Subject: help spread the good word--thanks

dear katie: my name is william fell-- a dentist in anchorage--i have had the opportunity/education of doing dentistry since 1968 in anchorage--and eight years of bush dentistry in kipnuk--one of the simplest and kindest things you can do for our great citizens is fluoridation of our water--every very young child that is cavity free till their parents loose control--10-14 years of age--is just one more adult with one less life time fear--can not buy that gift any cheeper --please give it your best to help this simple good request get through--thanks bill fell

**Katie Shows**

---

**From:** Richard J. Cook DDS [DrCook@gci.net]  
**Sent:** Wednesday, February 01, 2006 1:06 PM  
**To:** Katie Shows  
**Subject:** HCR#5\_1-30-06 concurrent resolution on fluoridation

Hi Katie,

Will you include my personal support for the resolution? There are very few public health measures that a community can do that are as safe, cheap and effective and community water fluoridation.

Every major world health organization supports this.

Sincerely,

Rick Cook

Richard J. Cook DDS  
712 West 12th Street  
Juneau, AK 99801  
DrCook@gci.net

**Katie Shows**

---

**From:** Dr. Bob White [drbobwhite@gci.net]  
**Sent:** Monday, February 06, 2006 1:36 PM  
**To:** Katie Shows  
**Subject:** House Concurrent Resolution #5

To: House Of Representatives  
State Of Alaska

Re: House Concurrent Resolution #5

In health care, preventive treatment is the least costly and the best quality of care. Disease treatment is much more costly and usually does not restore optimum health.

In dentistry - particularly in the oral health care of children - fluoridation over many, many years nation-wide - has proven to be a low cost, highly effective preventative therapy to prevent dental decay.

On the local level, I treat children from several of the nearby communities that do not have fluoridated water supplies - Skagway, Hoonah, Angoon, Gustavus. In general, the dental decay rate is much higher than Juneau children experiencing fluoridated water. Many of the children from outlying, small communities, receive state aid. This involves air fare for one parent and patients, lodging because there usually are fillings that cannot be completed in one day. The cost savings to the state with long-term fluoridation programs in the communities would be significant and would be increasingly productive over time, long term.

A few citizens will resist on the basis of medication by decree without consent - that is an unfounded view because those people can buy and drink bottled water. In the U.S., we do not withhold polio vaccinations, etc. because someone doesn't choose to have it. It allows "free choice", then there is the classic response - "It's poisonous" - it's in the same chemical family as chloride and no city would consider not chlorinating the city swimming pool.

Respectfully submitted,  
Dr. Bob White

**Katie Shows**

---

**From:** Doug Weaver [dsweaver@gci.net]  
**Sent:** Wednesday, February 01, 2006 10:30 PM  
**To:** Katie Shows  
**Subject:** Fluoride

Katie,

Could you please convey my wishes of support for the House Concurrent Resolution #5 supporting the use of community fluoride wherever possible in the state of Alaska.  
Thank you very much.

Doug Weaver, DDS  
Juneau

**Katie Shows**

---

**From:** Christine Moleski [cmoleski@gci.net]  
**Sent:** Wednesday, February 01, 2006 4:13 PM  
**To:** Katie Shows  
**Subject:** HCR 5

I am a dentist in Juneau, and the president of the Alaska Academy of General Dentistry (part of the National AGD). I strongly support HCR 5, supporting community fluoride as a positive program. I urge all Legislators to vote in favor of this resolution.

thank you. Christine Moleski, DMD

GARY A. MOELLER, D.D.S.  
JORDAN CREEK OFFICE CONDOMINIUMS  
2247 NORTH JORDAN AVENUE  
JUNEAU ALASKA 99801

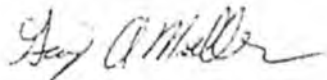
OFFICE 788-0819  
HOME 788-9211

February 1, 2006

Dear Ms. Shows:

I am writing to express my personal and professional support for House Concurrent Resolution No 5. Through my thirty years of experience in Alaska as a dentist in the Airforce, small and now large communities, I have witnessed innumerable instances of the benefits of fluoride on n.y patients.

Respectfully,



Gary A. Moeller, DDS

**Kenai Kodiak  
Dental Society**

FAX 907-465-3472

February 18, 2006

Honorable Representative Paul Seaton  
Attn: Katie Shows

Dear Representative Seaton and Katie:

We the undersigned members of the Kenai Kodiak chapter of the Alaska Dental Society would like to show support for HCR #5. As practicing dental professionals who on a daily basis see the benefits of fluoride use in the reduction in dental disease we would like to see the state take an active role in promoting the use of fluoride in our state. This decision was unanimous among the members present at our winter meeting.

Sincerely,

Chris L. Hudson Chris L. Hudson DDS

Ronald L. Martinelli RONALD L. MARTINELLI DDS

Thomas A. Kobylarz Thomas A. Kobylarz D.O.S.

W. Jay Marley, Jr. W. Jay Marley, Jr. D.D.C.

Z. Zoubek Z. Zoubek, DDS

DAN O. P. H. DAN O. P. H. DDS.

Derek N. Priester DEREK N. PRIESTER DDS

Robert J. Baxder Robert J. Baxder EMD

James J. Julian James J. Julian, DDS

W. J. Marley W. J. MARLEY DDS



Alaska Area Native Health Services  
4141 Ambassador Drive  
Anchorage, Alaska 99508-5928

February 10, 2006

The Honorable Paul Seaton, Representative  
Alaska House of Representatives  
State Capital, Room 102  
Juneau, AK 99801-1182

Dear Representative Seaton:

I am writing to express my support for passage of House Concurrent Resolution 5 (HCR 5), Support for Community Water Fluoridation. The Indian Health Service (IHS) publicly supports safe and effective community water fluoridation. Passage of HCR 5 will promote coordination of state, federal and tribal efforts to improve oral health by implementation of this proven public health initiative.

The Indian Health Service (IHS) is an agency of the U.S. Department of Health and Human Services and has been providing health care to Alaska Natives and American Indians for the past half century. The annual program budget for the IHS in Alaska is in excess of \$450 million. I join with the U.S. Surgeon General, Dr. Richard H. Carmona in affirming that oral health is essential to general health and well being. The Centers for Disease Control and Prevention have determined that in most communities, every \$1 invested in fluoridation saves \$38 or more in treatment costs. Thousands of studies have shown that optimal water fluoridation is safe and effective.

Please join me in supporting HCR 5.

Sincerely,

Christopher Mandregan, Jr., MPH  
Director

Alaska Area Native Health Service, IHS, DHHS

## Katie Shows

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From: Louie Flora  
Sent: Thursday, February 02, 2006 4:06 PM  
To: Katie Shows  
Subject: For your bill file

-----Original Message-----

From: POMS@legis.state.ak.us [mailto:POMS@legis.state.ak.us]  
Sent: Thursday, February 02, 2006 2:20 AM  
To: Louie Flora  
Subject: New Pom:HJR 5 No Milk Tax

Denny Weathers  
Third Judicial District  
% Po Box 1791  
Cordova 99574, DENNYKAY  
northerngirl@starband.net  
907-424-3745  
907-424-3745

I am very much opposed to this bill. Fluoridation in public drinking water can be deadly & many studies show it is a carcinogenic. A dentist will only prescribe fluoride tablets to a child up to the age of 10 or 12 years, after that fluoride taken internally is hazardous.

## Katie Shows

---

From: Louie Flora  
Sent: Monday, February 13, 2006 8:18 AM  
To: Katie Shows  
Subject: Pom for bill packet?

-----Original Message-----

From: POMS@legis.state.ak.us [mailto:POMS@legis.state.ak.us]  
Sent: Friday, February 10, 2006 12:46 PM  
To: Louie Flora  
Subject: New Pom:Health & Social Services

Pamela Samash  
Hc 66 Box 29715

Nenana 99760,

Many states have outlawed fluoride in the water for good reason.It's inaffective and dangerous.Long continual use of fluoride can cause a series of diseases,including auto-immune diseases,cancers and circu-lation problems.The medical community even admits this.Please consider removingall fluoride out of the water since standard water filters can't.

**Paul Seaton**

---

**From:** Dennis [epaloose2@acsalaska.net]  
**Sent:** Thursday, February 09, 2006 11:38 AM  
**To:** Paul Seaton  
**Subject:** Fluoride

Dear Paul,

I'm a dentist in Homer. I want to go on record as being against fluoride in public water systems.

There may be some scientific evidence that fluoride may reduce tooth decay, but there is so much we don't know about other potentially toxic effects that it makes no sense to take chances with our health. A young child who is new to the area from a non fluoridated water area, who is given multivitamins with fluoride, and then brushes with a fluoridated tooth paste plus now is drinking fluoridated water is in danger of being over fluoridated and experiencing the effects fluorosis.

I started dentistry in the early 70s. A time when the mercury in the amalgam fillings placed at that time was considered to be "locked up" in the filling, and therefore harmless. After working in dentistry for 26 years, I became very sick from my exposure to mercury both from my own amalgam fillings and exposure when removing old fillings from my patients. We now have more sensitive equipment that shows that the mercury is not "locked up", and poses a very real threat to the health of people who have those fillings. Now we know that dentists have the highest suicide rate in the world. They also have many other mercury related problems. We were assured we were safe, and we were not safe. Fluoride in water systems is another experiment with human health. Can we really afford to take that risk? I think not. A water system with the cleanest, purest water is, in my opinion, the safest for all concerned. If someone wants to add fluoride to it for their own use, that's their option. Some of us are too sensitive to be in this experiment.

Thank you for listening.

Dennis L. Anderson DDS

Research showing the benefits of  
community water Fluoridation

## Community Water Fluoridation --The # 1 Way to Prevent Dental Decay

**What is Community Water Fluoridation?** Community water fluoridation is the process of adjusting the fluoride content that occurs naturally in a community's water to the best level for preventing tooth decay. A key word in this definition is "adjusting" because all drinking water supplies contain some fluoride naturally. Fluorine is the 13<sup>th</sup> most abundant element in nature. It is present in small and varying amounts in all soils, plants, animals and water supplies and, therefore, all diets contain fluoride. There is no such thing as a fluoride-free water supply. A community that fluoridates its water is simply modifying the amount of fluoride already found naturally in the water to a level that is best for its residents dental health. Thus, adjusted water fluoridation means that the appropriate amount of fluoride is being maintained in the community's water supply. Getting the right amount of ingested fluoride is important to prevent tooth decay. However, where water fluoride levels occurs in nature at too high a level or dietary fluoride supplements or fluoride toothpaste are misused, discoloration of the teeth (dental fluorosis) also can occur. Thus, water operators continuously monitor the fluoride content of drinking water in communities that fluoridate. Research has shown that the most favorable concentration for community water fluoridation in the United States varies from 0.7 parts-per-million (ppm) in hot climates to 1.2 ppm in cold climates. For moderate climates, one part fluoride in one million parts of water (1 ppm) is recommended. (1 ppm is the same as 1 mg/L.) This amount is extremely small. To appreciate how small, think of it compared with other units of measurement. *1 ppm is equivalent to 1 inch in 16 miles, 1 minute in 2 years, or 1¢ in \$10,000.*

**What Are the Benefits of Community Water Fluoridation?** Hundreds of studies carried out in the United States and many other countries during the past half century prove that community water fluoridation prevents tooth decay. At a time when the only fluoride available was that found naturally in drinking water, studies showed that children who grew up in fluoridated communities experienced about 50-60 percent less decay than those in non-fluoridated ones. Because fluoride was so successful in preventing decay, it later was incorporated into many oral health products, such as toothpastes and mouthrinses. Most people in non-fluoridated communities now receive some protection against cavities from fluoride contained in these toothpastes and mouthrinses and in foods and beverages processed in fluoridated communities. This is why recent measures of dental decay prevention from community water fluoridation in the United States have been smaller, generally in the 20 - 40 % range. This remains a substantial reduction in disease.

**Do Adults Benefit from Drinking Fluoridated Water?** It has been a popular misconception that fluoridation helps only children. **Adults as well as children benefit from drinking fluoridated water throughout their lives.** Several studies show that people in their sixties who have lived all of their lives in areas with sufficient fluoride in the drinking water have much less tooth loss and tooth decay than do adults in non-fluoridated communities. Because more people are living longer and keeping more of their natural teeth, and older persons often experience receding gums and exposed roots, the problem of decay on the root surfaces of teeth is increasing. Recent studies have shown that adults who live in communities with optimal levels of fluoride in the water supply have much less root-surface decay than do adults of the same ages in low-fluoride communities.

**Why is Community Water Fluoridation an Ideal Public Health Method?** Community water fluoridation is effective, safe, inexpensive, and practical. The average cost of fluoridation is about 50 cents per person a year. This is one of the best bargains in health today. Studies in the United States, Canada and New Zealand have shown that the annual costs of children's dental care decrease after community fluoridation has been in operation for several years.

**The entire community benefits from community water fluoridation,** regardless of a person's age, income, level of education, or access to dental care services. Everyone automatically benefits when they drink fluoridated water and consume foods and beverages prepared with it.

**Is Community Water Fluoridation Safe?** The safety of community water fluoridation has been studied more thoroughly than any other public health measure during the past 45 years, with results of hundreds of clinical, animal and laboratory studies supporting its safety. One reason for the large amount of this research is that opponents of fluoridation have made so many inappropriate claims of harm, including assertions that water fluoridation causes heart disease, cancer, Down's syndrome, premature aging and even acquired immune-deficiency syndrome (AIDS). Much additional research has been conducted which refutes these unsupported claims. Each study has reaffirmed the safety of fluoridation.

*In areas where other fluoride methods have not been widely available, studies of community water fluoridation historically have shown reductions in tooth decay of approximately 60%. With use of other fluoride products such as fluoride containing toothpaste, rinses and gels, currently widespread in most areas of the United States, the measurable benefits from water fluoridation now are:*

- 20 to 40 percent less dental decay in persons of all ages.
- More children free of dental decay.
- Many fewer extracted permanent first molars ("6-year molars") in children.
- Lower dental bills for repairing decayed teeth.
- Less need for procedures that require anesthesia and drilling.

**Who Supports and Who Opposes Community Water Fluoridation?** Community water fluoridation has the unqualified approval of every major health organization in the United States and many other countries as well. The American Dental Association and the U.S. Public Health Service have endorsed community water fluoridation since 1950, and the American Medical Association, since 1951. In 1958, the World Health Organization recognized it as a practical and effective public health measure and has repeated its support at successive World Assemblies. The U.S. Department of Health and Human Services recently reaffirmed its support. The Consumers union has published excellent review articles in support of fluoridation. Other organizations have adopted policies in support of fluoridation, including The American Academy of Pediatrics, American Cancer Society, American Heart Association, American Public Health Association and International Association for Dental Research. Based on extensive review of 50 years of experience with fluoridation, the American Association of Public Health Dentistry in 1992 reaffirmed its unqualified support of fluoridation. Efforts to begin community water fluoridation, however, have frequently been hampered because of organized opposition to fluoridation. Frequently, these opponents also take issue with such basic health practices as the pasteurization of milk and immunization against infectious diseases. These groups try to attract support by appealing to popular generic issues, such as individual rights, freedom of choice, anti-pollution, natural diets and substances in the environment that lead to cancer. In many areas, proposals to fluoridate the water have become political issues, decided by public referenda or by elected officials who sometimes lack specific knowledge about the benefits and safety of fluoridation or fail to seek expert advice on health matters. During these campaigns, opponents often resort to scare tactics and spread false, irrelevant and misleading information. As a result of such misinformation, doubts raised in voters' minds may lead them to rejection of fluoridation.

**What is the Current Status of Community Water Fluoridation?** More than half of the U.S. population (about 135 million persons) live in communities served by fluoridated water supplies (0.7 ppm or more). This includes about 10 million people who live in communities with sufficient naturally occurring fluoride in their drinking water. About 30 million Americans cannot benefit from fluoridation because they live in areas, largely rural, that lack community water supplies. Currently, 42 of the 50 largest cities in the U.S. fluoridate their drinking water supplies. Several of them, including San Francisco, Baltimore, Pittsburgh and Washington D.C., have had fluoridated water for about 40 years. However, eight of the nation's 50 largest cities, including Los Angeles, San Diego, San Antonio and Honolulu, still have not fluoridated their water supplies and, consequently, are not providing the known dental benefits of fluoridation to their residents. Community water fluoridation has not been adopted as widely by smaller U.S. cities and towns. The reasons are usually economic or political, or sometimes simply reflect a lack of perceived need. As of December 31, 1989, the International Dental Federation (FDI) reported that its member countries estimated that 275 million persons living in 24 of those countries drank fluoridated water that was adjusted properly. The estimates showed that another 300 million persons, in the world drank water with naturally occurring, appropriate amounts of fluoride. The Republic of Ireland passed legislation requiring national fluoridation in the early 1960s. The municipal water supplies in Hong Kong and Singapore have been fluoridated for many years.

**Can you obtain information on fluoridation from your dentist?**

Contact your family dentist and discuss with him/her the values of fluoridation of public water systems.

*The American Association of Public Health Dentistry urges you to support of fluoridation of your community water system.*

If you need additional information please do not hesitate to visit our web site at

["www.volusia.healthnet.net/eh"](http://www.volusia.healthnet.net/eh) or call one of the one of the following phone numbers, where additional information may be obtained:

- (904) 947-3436 -----Volusia County Environmental Health Engineering Drinking Water Program
- (850) 487-1845-----Florida Department of Health Office of Dental Health
- (312) 440-2593 -----American Dental Association
- (404) 488-4450-----Centers for Disease Control

*In summary, community water fluoridation is the most effective way to prevent tooth decay. The following key facts about fluoridation summarize why this is so.*

- *Fluoridation is the least expensive and most effective way to reduce tooth decay.*
- *Fluoridation is safe.*
- *Fluoridation benefits children and adults.*
- *Fluoridation provides benefits that continue for a lifetime when consumption of fluoridated water continues.*
- *Fluoridation reduces the need for and cost of dental treatment.*
- *Fluoridation is the surest way for everyone in the community to benefit.*
- *Fluoridation benefits everyone when they drink fluoridated water and consume foods and beverages prepared with it.*

## Water Fluoridation

Fluoride is nature's cavity fighter, occurring in the earth's crust, in combination with other minerals in rocks and soil. Small amounts of fluoride occur naturally in all water sources, and varying amounts of the mineral are found in all foods and beverages. Water fluoridation is the process of adjusting the natural level of fluoride to a concentration sufficient to protect against tooth decay. Thanks in large part to community water fluoridation, half of children ages 5 to 17 have never had a cavity in their permanent teeth.

Fluoride's benefits are particularly important for those people, especially children, who lack adequate access to dental care. Water fluoridation has been recognized by the Centers for Disease Control and Prevention (CDC) as one of the 10 great public health achievements of the 20th Century. U.S. Surgeon General David Satcher wrote in his report, *Oral Health in America*, "Community water fluoridation is safe and effective in preventing dental caries in both children and adults. Water fluoridation benefits all residents served by community water supplies regardless of their social or economic status."

According to the April 2000 *Journal of Dental Research*, the use of fluoride since 1960 has been the primary factor in saving some \$40 billion in oral health care costs in the United States. The annual cost of community water fluoridation is approximately \$0.50 per person. The lifetime cost to provide fluoridated water to one person is less than the cost of a single dental filling.

Unfortunately, despite overwhelming evidence of fluoridation's safety and efficacy, more than 100 million Americans still do not benefit from fluoridated water. The ADA recommends that Congress increase funding for federal and local initiatives to support water fluoridation in communities nationwide.

In addition to the ADA, nearly 100 national and international organizations recognize the public health benefits of community water fluoridation for preventing dental decay. They include the World Health Organization, the U.S. Public Health Service, the American Medical Association, the American Academy of Pediatrics, the American Academy of Family Physicians, the International Association for Dental Research, the American Cancer Society and the American Dietetic Association.

The ADA's policies regarding community water fluoridation are based on generally accepted scientific knowledge, that is, knowledge based on the efforts of nationally recognized scientists who have conducted research using the scientific method, have drawn appropriate balanced conclusions based on their research findings and have published their results in peer-reviewed professional journals that are widely held or circulated.

The ADA is committed to helping to bring the benefits of water fluoridation to more Americans, through education, advocacy and research.

# An Economic Evaluation of Community Water Fluoridation

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## Abstract

**Objective:** The purpose of this research was to assess the local cost savings resulting from community water fluoridation, given current exposure levels to other fluoride sources. **Methods:** Adopting a societal perspective and using a discount rate of 4 percent, we compared the annual per person cost of fluoridation with the cost of averted disease and productivity losses. The latter was the product of annual dental caries increment in nonfluoridated communities, fluoridation effectiveness, and the discounted lifetime cost of treating a carious tooth surface. We obtained or imputed all parameters from published studies and national surveys. We conducted one-way and three-way sensitivity analyses. **Results:** With base-case assumptions, the annual per person cost savings resulting from fluoridation ranged from \$15.95 in very small communities to \$18.62 in large communities. Fluoridation was still cost saving for communities of any size if we allowed increment, effectiveness, or the discount rate to take on their worst-case values, individually. For simultaneous variation of variables, fluoridation was cost saving for all but very small communities. There, fluoridation was cost saving if the reduction in carious surfaces attributable to one year of fluoridation was at least 0.046. **Conclusion:** On the basis of the most current data available on the effectiveness and cost of fluoridation, caries increment, and the cost and longevity of dental restorations, we find that water fluoridation offers significant cost savings. [*J Public Health Dent* 2001;61(2):78-86]

**Key Words:** cost, cost savings, cost effectiveness, water fluoridation, and caries increment.

The Centers for Disease Control and Prevention recently identified water fluoridation as one of 10 great public health achievements in the 20th century (1). Before 1980, communities with fluoridated water supplies typically experienced 50 percent less tooth decay than did nonfluoridated communities (2). Because of the relatively high caries before 1980, economic evaluations of community water fluoridation during this time typically found that the cost of averted disease attributable to fluoridation exceeded the cost to implement and maintain fluoridation (3-5). For example, Nielsen and Douglass reported a ratio of cost of averted disease to program cost of 8.22 (5), while Davies reported a ratio of 6.6 (3). In the 1980s, national survey data indicated a secular decline

in caries prevalence (2,6) largely attributed to the widespread use of fluoride toothpaste, increased fluoridation of community water systems, and the associated diffusion of fluoride to nonfluoridated communities via the export of beverages and foods (2,7).

This led some to question whether community water fluoridation was still a worthwhile public health investment. For example, according to White, "as recently as 1989, major newspapers have reported articles that call for reexamination of water fluoridation programs, citing the decline in dental caries as a reason to reconsider fluoridation and proposing that water fluoridation may no longer be needed" (8). To date, no economic evaluation of community water fluoridation has assessed the associated cost

of averted disease in the presence of lower caries incidence. Therefore, the purpose of this research is to determine if reduction in cost of restorative care due to averted disease still exceeds the program costs of water fluoridation, and, if not, to measure its cost effectiveness. Our analysis was conducted from a societal perspective, which may be adapted to decisions at the local level.

## Methods

**Form of Economic Evaluation.** We examined the per person net cost resulting from one year of exposure to water fluoridation, where (9)

$$\text{Net Cost} = \text{Cost}_{\text{Water Fluoridation}} - \text{Cost}_{\text{Disease Averted and Productivity Losses Averted}}$$

(Equation 1)

If net cost is negative, then water fluoridation is cost saving. We confined our analysis to two alternatives—implementing or not implementing fluoridation—because previous studies have found that it is the least costly way to deliver fluoride (10). We used the following formula to calculate the *Cost of Disease Averted and Productivity Losses Averted*:

$$\text{Costs}_{\text{Disease Averted and Productivity Losses Averted}} = (\text{Caries Increment}_{\text{Nonfluoridated}}) * (\text{Effectiveness}_{\text{Water Fluoridation}}) * (\text{Average Discounted Lifetime Cost of Carious Surface})$$

(Equation 2)

where

$\text{Caries Increment}_{\text{Nonfluoridated}}$  = annual increment of decayed, missing, and filled surfaces (DMFS) in persons not exposed to fluoridated water,

$\text{Effectiveness}_{\text{Water Fluoridation}}$  =

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estimates of DFS would underestimate caries increment in unexposed persons. To correct for this bias, we used mean DFS figures from Region VII (Pacific), the region with the lowest percentage of the population receiving fluoridated water (20 percent). Imputed mean annual increments equaled 1.09 surfaces for adults aged 18-44 years and 0.43 for adults aged 45-65 years.

Caries increments from NHANES (I-III) were imputed with the same basic methodology as the NSOH estimates and calculated with the following formula:

$$\text{Increment} = \text{DFT}_{12} - (\text{TEETH}_{12} / \text{TEETH}_{11}) * \text{DFT}_{11}$$

(Equation 4)

where

DFT<sub>ix</sub> = number of decayed and filled teeth in time period x

TEETH<sub>ix</sub> = the number of teeth in the mouth in time period x

With NHANES, however, we used data on the same birth cohort over time while with NSOH we used data from different birth cohorts for the same time period. Additionally, NHANES data in earlier time periods were reported at the tooth level rather than the surface level. To obtain surface level increments for the NHANES data, tooth level increments for each cohort were multiplied by the ratio of DFS to DFT from the NSOH data (16). Finally, NHANES did not report findings by fluoridation status or region of the country.

We used Equation 4 to calculate increments for children aged 8-17 years between 1971 and 1974 and adults aged 25-34 years between 1988 and 1991. This increment, 0.49 surfaces, was generalized both to children and to adults aged 18-45 years. For older adults we compared adults aged 35-44 years between 1971 and 1974 with adults aged 55-65 years between 1988 and 1991. For this group, increment rounded to 0.0 surfaces.

Table 1 contains increment estimates for each age group derived from the three data sources. Because our evaluation criterion is net cost or cost savings, worst-case assumptions are those that decrease cost savings (NHANES) and best-case assumptions are those that increase cost savings (published studies).

**Water Fluoridation Effectiveness.** Estimates of the effectiveness of water fluoridation were obtained from the published literature and imputed from the National Survey of Oral Health in US Schoolchildren, 1986-87 Public Use Data File (15). A review of published studies that were conducted from 1979 to 1989 among US children reported a mean caries reduction of 26 percent from water fluoridation (2). The few post-1980 studies documenting the effectiveness of water fluoridation in adult populations also produced effectiveness parameters close to 25 percent. For example, Grembowski et al. found that adults aged 30 years living in fluoridated communities in the Pacific Northwest experienced 31 percent less dental decay than did adults in non-fluoridated communities (12). Eklund et al. found that adults who received water with a high fluoride concentration (3.5 ppm) experienced 20 percent fewer carious surfaces than did adults living in communities in which the fluoride content was 0.7 ppm (21).

Effectiveness estimates obtained from cross-sectional surveys vary widely across geographic region (2). For example, analysis of the National Survey of Oral Health in US Schoolchildren, which compared caries prevalence in children with lifetime exposure and with no exposure to fluoridated water, found that water fluoridation's effectiveness ranged from -5.6 percent in the Midwest to 60.6 percent in the Pacific region. The national estimate of effectiveness, after controlling for exposure to other sources of fluoride, was 25 percent (22). The negative effectiveness value in the Midwest may have been due to small sample size because few children living in this region actually received nonfluoridated water (2). Using the NSOH data set we estimated effectiveness from the age-adjusted DMFS for children aged 6-17 years who were not exposed to fluoride drops or tablets and who had lifetime residence in communities either with or without fluoridation. Base-case effectiveness (25%), worst-case effectiveness (12%), and best-case effectiveness (29%) were calculated, respectively, from data for all children living in the United States, children living within the four regions with the lowest effectiveness (DMFS<sub>Fluoridated</sub>=2.73, DMFS<sub>Nonfluoridated</sub>=3.11), and chil-

dren living in the three regions with the highest effectiveness (DMFS<sub>Fluoridated</sub>=2.56, DMFS<sub>Nonfluoridated</sub>=3.60).

**Number of Carious Surfaces Attributable to Foregoing One Year of Water Fluoridation Exposure.** Estimates of the number of carious surfaces attributable to foregoing one year of water fluoridation exposure (annual caries increment in nonfluoridated communities \* fluoridation effectiveness), ranged from 0.04, assuming low effectiveness and increment, to 0.34, assuming high effectiveness and increment, and equaled 0.19 under base-case assumptions.

**Average Discounted Lifetime Cost of a Carious Surface.** An amalgam restoration requires maintenance over the life of the tooth. To simplify the calculation of the discounted lifetime cost associated with a carious surface, we divided the population into 10 age groups (6-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, and 60-65). For each age group, we calculated the discounted expected lifetime cost of applying and maintaining a one-surface amalgam restoration for a carious surface developed at the midpoint of the age group. This calculation required estimates of the costs associated with treatment and lost productivity, the expected life of an amalgam, and the probability that a previously restored tooth was present at the midpoint of each age group.

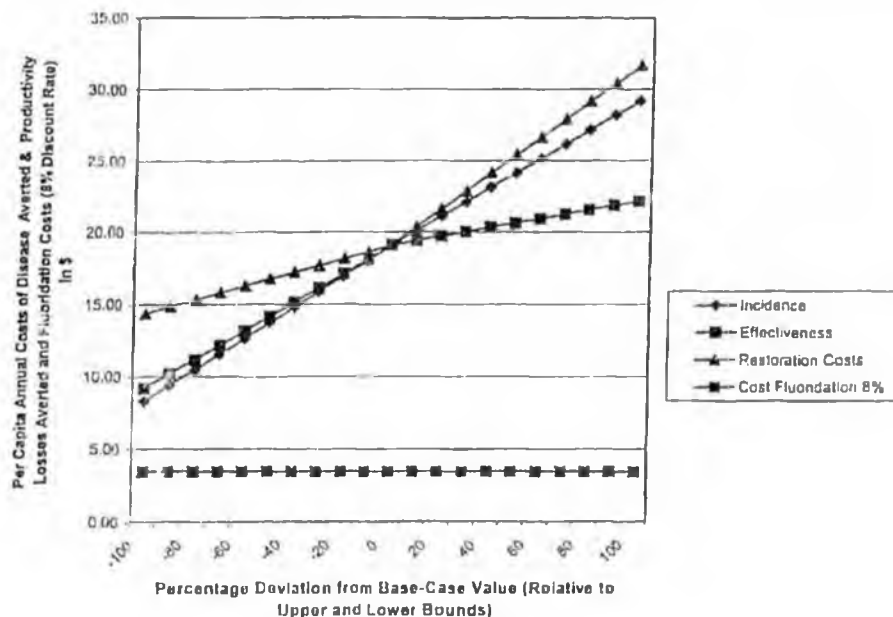
An American Dental Association Survey found that the average cost of a one-surface amalgam restoration in 1995 was \$54 (23). To calculate productivity losses, we assumed that the average loss in work time due to a restorative dental visit was one hour. The average hourly total compensation per US worker in 1995 was \$18.12 (24). We included this cost for all individuals, regardless of age or work status. For individuals not earning an income outside of the home, this value reflected the opportunity cost of that decision; for children, this value reflected the sacrifice in caregiver time to take the child to the dentist. Hence, the total cost to society resulting from a decayed tooth surface was approximately \$72.

We estimated the expected life of an amalgam from five published studies (25-29). The estimated median life for an amalgam ranged from 9 to 14 years and for our calculations, we assumed the expected life of an amalgam to be

TABLE 4  
Annual per Person Cost Savings (Negative Net Cost) from Water Fluoridation

Community Size	Best Case	Base Case	Worst Case
<5,000	\$31.04	\$15.95	\$0.85
5,000-9,999	\$32.57	\$17.48	\$2.38
10,000-20,000	\$33.15	\$18.06	\$2.96
>20,000	\$33.71	\$18.62	\$3.52

FIGURE 1  
One-way Sensitivity Analysis for Varying Incidence, Effectiveness, and Average Discounted Lifetime Cost of Carious Surface



but two of the systems used hydrofluosilicic acid) covered an increase in fluoride from <0.3 ppm to 0.8 ppm. We annuitized the one-time fixed costs over 15 years using discount rates of 4 percent (base case), 0 percent (best case), and 8 percent (worst case) (32). All costs were converted to 1995 US dollars with use of the CPI-U (33) (Table 3).

**Sensitivity Analysis.** To test the sensitivity of our results to estimated parameter values, we varied the parameters one at a time and calculated their break-even values. Additionally, we conducted three-way sensitivity analyses, allowing the discount rate, effectiveness, and increment to vary throughout their plausible ranges simultaneously.

### Results

With a 4 percent discount rate and with the number of carious surfaces at-

tributable to foregoing one year of water fluoridation exposure taking on its best-, worst- and base-case values, the net cost of community water fluoridation was negative (cost saving) under all scenarios (Table 4).

In the one-way sensitivity analysis, the per person *Cost of Disease Averted and Productivity Losses Averted* (hereafter termed *Costs Averted*) was calculated as the increment, effectiveness, and average discounted lifetime cost of a carious surface (hereafter termed *costs of caries*) were varied individually between their lower- and upper-bound estimates (Figure 1). The slopes of the resulting lines suggest that *Costs Averted* was most sensitive to increases in *cost of caries* above its baseline value and to decreases in increment below its baseline value. Holding all other parameters constant and allowing effectiveness to vary from its worst- to best-case value caused *Costs Averted* to

range from \$9.18 to \$22.18. Allowing only increment or *cost of caries* to vary from their worst- to best-case values produced *Costs Averted* estimates of \$8.30 to \$29.18 and \$14.74 to \$31.67, respectively. The horizontal line in Figure 1 shows a per person fluoridation costs of \$3.44 (worst-case scenario costs for a community of fewer than 5,000). Thus, when only one parameter (increment, effectiveness, or *cost of caries*) is varied between its upper- and lower-bound values, water fluoridation is cost saving for communities of all sizes.

We performed break-even analyses both for communities with populations fewer than 5,000 and those with populations greater than 20,000. Holding the discount rate constant at 4 percent and increment constant at its baseline (0.76), water fluoridation was cost saving for all effectiveness levels greater than 0.04 in the smallest communities or 0.01 in the largest communities. Holding discount rate constant at 4 percent and effectiveness constant at its baseline (0.25), water fluoridation was cost saving for all increment levels greater than 0.13 in the smallest communities or 0.02 in the largest communities. Holding effectiveness and increment constant at their baselines (0.25 and 0.76, respectively), water fluoridation was cost saving if the discount rate was less than 49 percent for the smallest and 202 percent for the largest communities.

The per person annual cost of water fluoridation was compared with *Costs Averted* when the number of carious surfaces attributed to foregoing one year of water fluoridation and the discount rate vary (Figure 2). Only when we allowed effectiveness, increment, and the discount rate to take on their worst-case values (the number of carious surfaces attributed to foregoing one year of water fluoridation equaled 0.04 and the discount rate equaled 8 percent) was water fluoridation not cost saving, and then only for communities with fewer than 5,000 people. Water fluoridation was cost saving for very small communities when the number of carious surfaces attributed to foregoing one year of water fluoridation exceeded 0.046 surfaces.

### Discussion

With use of the most current data available on the effectiveness and costs of water fluoridation, caries in-

life of a water fluoridation project was 15 years and the benefits did not begin until after five years of exposure, the per person discounted cost savings over the life of the project would be \$25.55 (under base-case assumptions). This value would be \$66.16 if benefits accrued after only one year of exposure. Finally, we assumed that the costs of dental fluorosis attributable to water fluoridation are negligible (14).

It is important to note that we assumed no change in dentists' behavior in response to income reductions spurred by decreased need for restorative care. Since dental markets are characterized by asymmetric information (patients don't have full information and thus make their dental consumption decisions based on their dentists' recommendations), providers may be able to induce demand for other dental services. Also, dentists' clinical decisions may vary due to differences in knowledge and beliefs about diagnostic criteria, disease processes, risk factors, and alternative treatment options (37). Thus, dentists may be predisposed to diagnose marginal lesions as carious in fluoridated areas with small patient supplies (36). To the extent that this is possible, dentists may provide more diagnostic, preventive, or even restorative services to maintain a steady stream of income, or may reduce the recall interval between dental visits. Such behavior was reported by Grembowski, who found that insured children with continuous fluoridation exposure received more diagnostic, preventive, and simple restorative services than children with low fluoride exposure (36). Thus, the potential cost savings from reduced restorative care may be partially offset by increased consumption of diagnostic and preventive care.

Alternatively, other assumptions made in this analysis may have biased cost savings downward. For example, we did not include the *Costs of Disease Averted and Productivity Losses Averted* for decay in the primary dentition or for adults over age 65 years. Furthermore, we did not include productivity losses due to dental discomfort in our estimates of averted productivity losses. Finally, we assumed that simple amalgam restorations would always be used to treat initial decay and in subsequent replacements. These assumptions ignore potentially costlier treatment, including for example,

composite restorations, root canal treatment, crowns, and bridges.

The magnitude of the cost savings resulting from water fluoridation will depend on the parameter values of the population under consideration. To measure the cost savings that have accrued from the introduction of water fluoridation in the United States, high-end estimates of effectiveness and increment would be most appropriate, because initial increment and effectiveness rates are likely to be high when no water is being fluoridated. A local community that is evaluating a proposed water fluoridation project may require lower increment and effectiveness assumptions if it receives diffused benefits of water fluoridation from nearby communities (2,7,38). For example, in midwestern US communities, low-end increment and effectiveness parameters would be more applicable, whereas in the Pacific US region, high-end values of incidence and effectiveness would be more pertinent.

Relatively few economic evaluations of community water fluoridation programs have been conducted within the last decade. Brown et al. determined that a negative structural shift in US dental expenditures had occurred around 1979 (55). The authors attributed the shift in part to improved oral health resulting from increased access to community water fluoridation. Expenditures decreased by 10 percent which in turn led to savings of 39.1 billion dollars (1990 dollars) from 1979 to 1989. In 1989 the *Journal of Public Health Dentistry* dedicated a special issue to the proceedings from a University of Michigan workshop on the cost effectiveness of caries prevention in dental public health (56). Many of the articles in that issue provided estimates of parameters used in our analysis. The issue did not, however, feature a complete economic evaluation that explicitly stated all assumptions and findings, nor was a sensitivity analysis performed. Our analysis is unique in that it includes both the productivity losses and the costs of subsequent replacements in measuring the costs associated with a dental restoration. In addition, to our knowledge, no other study has used sensitivity analysis to determine the robustness of water fluoridation cost savings given the secular decline in caries incidence and the increased diffusion of water fluoridation's benefits

to communities without fluoridation.

Using knowledge of local increment and effectiveness estimates, local officials may estimate potential cost savings from the information presented here. Tables providing net cost estimates for 756 combinations of effectiveness, increment, and cost of caries may be obtained from the authors. One benefit of the per-year savings approach is that it allows decision makers to customize their calculations for projects in which the *Costs of Averted Disease* differ in each year or for projects of varying duration. This would allow consideration of various scenarios, such as decreasing incidence over time due to fluoridation in nearby areas.

## References

1. CDC. Fluoridation of public drinking water to prevent dental caries. *Morb Mortal Wkly Rev MMWR* 1999;48:933-40.
2. Ripa LW. A half-century of community water fluoridation in the United States: review and commentary. *J Public Health Dent* 1993;53:17-44.
3. Davies GN. Fluoride in the prevention of dental caries: a tentative cost-benefit analysis. *Br Dent J* 1973;135:131-4.
4. Nelson W, Swint JM. Cost-benefit analysis of fluoridation in Houston, Texas. *J Public Health Dent* 1976;36:88-95.
5. Niessen LC, Douglass CW. Theoretical considerations in applying benefit-cost and cost-effectiveness analysis to preventive dental programs. *J Public Health Dent* 1984;44:156-68.
6. Newbrun E. Effectiveness of water fluoridation. *J Public Health Dent* 1989; 49:279-89.
7. Lewis DW, Banting DW. Water fluoridation: current effectiveness and dental fluorosis. *Community Dent Oral Epidemiol* 1994;22:153-8.
8. White BA, Antczak-Boukoms AA, Weinstein MC. Issues in the economic evaluation of community water fluoridation. *J Dent Educ* 1998;53:647-57.
9. Haddix AC, Teutsch SM, Shaffer P, Dunet D. *Prevention effectiveness*. New York: Oxford University Press, 1996:109.
10. Garcia IA. Caries incidence and costs of prevention programs. *J Public Health Dent* 1989; 19:259-71.
11. Featherstone JD. Prevention and reversal of dental caries: role of low level fluoride. *Community Dent Oral Epidemiol* 1999; 27:31-40.
12. Grembowski D, Fiset L, Spadafora A. How fluoridation affects adult dental caries. *J Am Dent Assoc* 1992;123:49-54.
13. Brown LJ. Dental care utilization: how saturated is the patient market? *J Am Dent Assoc* 1999;130:573-80.
14. US Department of Health and Human Services. Review of fluoride benefits and risks. Report of the ad hoc subcommittee on fluoride of the Committee to Coordinate Environmental Health and Related

Likewise, Costs of Disease and Productivity Losses<sub>fluoridated</sub> = Caries Increment<sub>fluoridated</sub> \* Average Discounted Lifetime Cost of Carious Surface.

Thus, Costs<sub>Disease Averted and Productivity Losses Averted</sub> reduces to:

$$\frac{(\text{Caries Increment}_{\text{nonfluoridated}} - \text{Caries Increment}_{\text{fluoridated}}) * \text{Average Discounted Lifetime Cost of a Carious Surface.}}{\text{Caries Increment}_{\text{nonfluoridated}}}$$

This equation is multiplied by (Caries Increment<sub>nonfluoridated</sub> / Caries Incre-

ment<sub>nonfluoridated</sub>), a factor of 1, to yield:

$$\frac{(\text{Caries Increment}_{\text{nonfluoridated}} - \text{Caries Increment}_{\text{fluoridated}}) * (\text{Caries Increment}_{\text{nonfluoridated}} / \text{Caries Increment}_{\text{nonfluoridated}}) * (\text{Average Discounted Lifetime Cost of a Carious Surface})}{\text{Caries Increment}_{\text{nonfluoridated}}}$$

Regrouping terms, this equation may be rewritten:

$$\frac{\text{Caries Increment}_{\text{nonfluoridated}} * [(\text{Caries Increment}_{\text{nonfluoridated}} - \text{Caries Increment}_{\text{fluoridated}}) / (\text{Caries Increment}_{\text{nonfluoridated}})] * (\text{Av-$$

erage Discounted Lifetime Cost of a Carious Surface).

The term in brackets is the absolute value of the measure of effectiveness in the studies from which we took our data (2,3). Thus, the equation becomes

$$\text{Costs}_{\text{Disease Averted and Productivity Losses Averted}} = (\text{Caries Increment}_{\text{Nonfluoridated}}) * (\text{Effectiveness}_{\text{Water Fluoridation}}) * (\text{Average Discounted Lifetime Cost of Carious Surface}),$$

which is Equation 2 in text.




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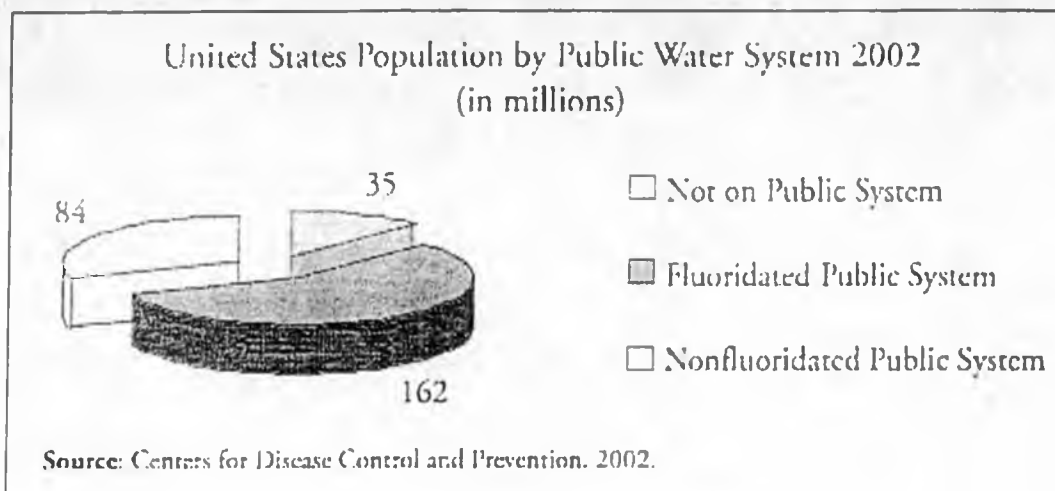
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## COMMUNITY WATER FLUORIDATION

In 1945, Grand Rapids, Mich., became the first city in America to add fluoride to its water supply to reduce tooth decay. This began a steady increase in community water fluoridation as a low-cost, efficient public health intervention. Fluoride occurs naturally in water at varying levels. Adding or reducing fluoride in the water to about 1 part per million has been found to reduce tooth decay substantially at a low cost of less than \$1 dollar per person per year, depending on the size of the community. Although fluoride is particularly beneficial to children while their teeth are forming, it helps throughout life. It is superior to other options because no individual or family decision has to be made to benefit and no appointment or routine compliance or purchase of a product is necessary. In 1999, the Centers for Disease Control included water fluoridation in its list of 10 great public health achievements of the 20<sup>th</sup> century. As of 2002, 162 million people drink fluoridated water. This represents 66 percent of the 245 million who are served by public water supplies.

About 27 states have achieved the goal established by the Department of Health and Human Services of fluoridating water for 75 percent or more of their citizens. Although public water systems are managed locally, state legislatures become involved with fluoridation when they appropriate funds for oral health programs, assist communities with fluoridation, or consider legislation that mandates or prohibits water fluoridation. According the Centers for Disease Control (CDC), 11 states- California, Connecticut, Delaware, Georgia, Illinois, Kentucky, Minnesota, Nebraska, Nevada, Ohio and South Dakota-plus Puerto Rico and the District of Columbia currently mandate community water fluoridation.

Community water fluoridation has its opponents. A variety of groups, such as the Fluoride Action Network, Citizens for Safe Drinking Water and the Citizens for Health, oppose fluoridation because they claim it has never been tested for safety; it leads to a high incidence of fluorosis. (discoloring of tooth enamel) and causes bone fractures, cancer, osteoporosis, arthritis, kidney disorders, low sperm count, low IQ and other problems. The Foundation for Neuroscience and Safety links community water fluoridation to higher rates of lead poisoning in children, which causes hyperactivity, learning disabilities, substance abuse and violent crime. Some people also feel that adding fluoride should be a personal choice and that adding it to the water is "mass medication."



Senator Ray Rawson, a Nevada dentist who led the drive for fluoridating water in Las Vegas, calls these arguments "junk science." "Fluoride really works, and it really is safe," he says. More than 3,700 studies on fluoride have been completed during the last 30 years, including 50 peer-reviewed epidemiological studies, and none has established a higher risk of cancer or any other disease. A review of the scientific literature shows only a few studies that document health problems in animals, and then only when subjects were given concentrations of fluoride that are 50 to 200 times higher than people could possibly obtain through drinking fluoridated water. In 1978, *Consumer Reports* magazine wrote "The simple truth is that there is no scientific controversy over the safety of fluoridation. The practice is safe, economical and beneficial." Opposition to community water fluoridation has slowed progress in getting communities on board, which has led to higher rates of tooth decay and health care costs.

For legislators who are interested in alternatives to fluoridated water, other options exist which most states pursue, primarily for rural and frontier communities who use well water. In 2001, 34 state oral health programs provided school-based programs that provide fluoride mouth rinses or tablets to 1.1 million children. Fourteen states have programs to apply dental sealants-which coat permanent teeth to prevent tooth decay- among high-risk populations. Fewer than 150,000 children were helped this way in 2001. These programs are more expensive than community water fluoridation, and reach relatively few people.

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## Press Release

### ADA and CDC Celebrate 60th Anniversary of Community Water Fluoridation

CHICAGO, January 21, 2005—Community water fluoridation, cited as one of 10 great public health achievements of the 20th century by the Centers for Disease Control and Prevention (CDC), celebrates its 60th birthday this year.

To help recognize this public health milestone, the American Dental Association (ADA) and the Centers for Disease Control and Prevention (CDC), will host a National Fluoridation Symposium at the ADA headquarters in Chicago from July 13–July 16, 2005. The symposium will recognize the impact of community water fluoridation for improving oral health and overall health.

To also commemorate the anniversary, CDC has developed a resource poster for water facility operators. The poster provides key information, including optimal fluoridation level for their states, how to monitor fluoridation levels at the plant to ensure optimal levels, operational and maintenance guidance, and benefits to the community. The poster has been endorsed by key partners in expanding community water fluoridation including the American Water Works Association, the National Rural Water Association, and the Association of State and Territorial Dental Directors.

"Fluoridation is the single most effective public health measure for preventing tooth decay and improving oral health over a lifetime," stated William R. Maas, D.D.S., M.P.H., Director, CDC Division of Oral Health.

"Community water fluoridation is the most economical preventive method we have in dentistry," said Richard Haught, D.D.S., ADA president, "We need to put special emphasis on providing fluoridation to those who aren't able to enjoy its benefits now."

#### **Grand Rapids, Michigan, first community to fluoridate water**

On January 25, 1945, Grand Rapids, Mich., became the first community to adjust the fluoride content in the public water system to the level effective for prevention of tooth decay. Since that time, some 170 million Americans now have access to community water fluoridation.

"Because it reaches all people in a community regardless of education or income level, it is a powerful strategy in our efforts to eliminate differences in oral health among our citizens," explained Dr. Maas.

"There has been a significant and profound improvement in the oral health of the nation's children living in fluoridated communities," said the ADA's Dr. Haught. "I am convinced of the benefits of community water fluoridation. I have seen the oral health differences before and after it was instituted in my hometown of Tulsa, Oklahoma."

### **Supports expansion of community water fluoridation**

The CDC Division of Oral Health supports expansion of community water fluoridation throughout the nation by providing technical assistance to state water programs on fluoridation implementation and practices. The division monitors the extent and quality of fluoridation through the Water Fluoridation Reporting System, which also provides the public with information on the level of fluoride in water systems. This information is available on the My Water's Fluoride Web site, which allows consumers in 31 participating states and two Native American tribes to obtain basic information about their water system, including the number of people served by the system and the target fluoridation level (<http://apps.nccd.cdc.gov/MWF/Index.asp>).

The American Dental Association has long endorsed community water fluoridation as safe, effective and necessary in preventing tooth decay. This support has been the Association's position since policy was first adopted in 1950. The ADA, along with state and local dental societies, continues to work with federal, state, and local agencies to increase the number of communities benefiting from optimally fluoridated water. The ADA has developed a number of information resources, including the *Fluoridation Facts* booklet, videos, electronic presentations and resource kits. For more information and to view the entire ADA resource list, visit the ADA's "Fluoride and Fluoridation" Web site at <http://www.ada.org/goto/fluoride>.\*

### **Key Facts About Community Water Fluoridation**

- Water fluoridation is the addition of fluoride to adjust the natural concentration of a community's water supply to the level recommended by the U.S. Public Health Service for optimal dental health—0.7 to 1.2 parts per million (equivalent to about 1 inch in 16 miles or 1 cent in \$10,000).
- Dental caries, commonly known as tooth decay or cavities, is an infectious multifactorial disease in which acid from bacteria dissolve the enamel of a tooth. This often results in pain and loss of tooth structure. Fluoride works by facilitating remineralization of the tooth's enamel, keeping the tooth strong by preventing the loss of minerals from the enamel as well as by enhancing the re-uptake of

minerals into the tooth.<sup>1</sup>

- Fluoridation of the public water supply was first instituted on January 25, 1945, in Grand Rapids, Michigan. Studies in eight communities (four implemented fluoridation and four did not) comparing rates of tooth decay documented persuasive evidence of its effectiveness in decreasing tooth decay in children. As a result, other U.S. cities rapidly adopted this preventive intervention.<sup>2-5</sup>
- A recent review by the U.S. Task Force on Community Preventive Services strongly recommended community water fluoridation. For the many studies reviewed, there was a median 29% reduction of decay among children and adolescents.<sup>6</sup>
- Community water fluoridation benefits everyone, especially those without access to regular dental care. It is the most efficient way to prevent one of the most common childhood diseases – tooth decay (5 times as common as asthma and 7 times as common as hay fever in 5-to-17-year-olds). Without fluoridation, there would be many more than the estimated 51 million school hours lost per year in this country because of dental-related illness.<sup>7</sup>
- Currently, 67% of Americans on public water systems receive optimally fluoridated water.<sup>8</sup>
- Fluoridation is cost effective. For most U.S. communities, every dollar spent on community water fluoridation results in a savings of \$38 in costs to repair (fill) a decayed tooth.<sup>9</sup>

1. Recommendations for Using Fluoride to Prevent and Control Dental Caries in the United States. *MMWR*, August 17, 2001; 50 (RR-14):1-42.

2. Blaney JR, Tucker WH. The Evanston Dental Caries Study. II. Purpose and mechanism of the study. *Journal of Dental Research*, 1948;27:279-286.

3. Ast DB, Finn SB, McCaffrey I. The Newburgh-Kingston Caries Fluorine Study. I. Dental findings after three years of water fluoridation. *American Journal of Public Health*, 1950;40:716-724.

4. Dean HT, Arnold FA, Jay P, Knutson JW. Studies on mass control of dental caries through fluoridation of the public water supply. *Public Health Reports* 1950;65:1403-1408.

5. Hutton WL, Linscott BW, Williams, DB. The Brantford fluorine experiment: Interim report after five years of water fluoridation. *Canadian Journal of Public Health* 1951;42:81-87.

6. Promoting Oral Health: Interventions for Preventing Dental Caries, Oral and Pharyngeal Cancers, and Sports-related Craniofacial Injuries: A Report on the Recommendations of the Task Force on Community Preventive Services. *MMWR*, November 30, 2001;50(RR-21):1-13.)

7. Gift HC. 1997. Oral health outcomes research: Challenges and opportunities. In Slade GD, ed., *Measuring Oral Health and Quality of Life* (pp. 25-46). Chapel Hill, NC: Department of Dental Ecology, University of North Carolina.

8. CDC Water Fluoridation Reporting System, 2002. Available at [www2.cdc.gov/nohss/FluoridationV.asp](http://www2.cdc.gov/nohss/FluoridationV.asp).

9. Griffin SO, Jones K, Tomar SL. An economic evaluation of community water fluoridation. *Journal of Public Health Dentistry* 2001;61(2):78-86.

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**Subject: Fluoridation**

**Date:** Fri, 29 Oct 2004 15:08:27 -0500

**From:** "William J. Marley" <iswjm@alaska.net>

**To:** Representative Paul Seaton <Representative\_Paul\_Seaton@Legis.state.ak.us>

Rep Seaton and Lauren Radcliffe

Paul, Lauren;

Following is the information we discussed regarding the efficacy of fluoridation.

Its hard to be any more credible than CDC.

National Center for Chronic Disease Prevention and Health Promotion

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## Fact Sheet

### Cost Savings of Community Water Fluoridation

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August 2001—Two recently published studies conducted by CDC reaffirm the benefits of community water fluoridation. Together, the studies continue to show that widespread community water fluoridation prevents cavities and saves money, both for families and the health care system. In fact, the economic analysis found that for larger communities of more than 20,000 people where it costs about 50 cents per person to fluoridate the water, every \$1 invested in this preventive measure yields \$38 savings in dental treatment costs.

"An Economic Evaluation of Community Water Fluoridation," published in the spring issue of the *Journal of Public Health Dentistry*, presents the results of an economic analysis of water fluoridation under modern conditions of widespread availability of fluorides. Researchers from CDC and Terry College of Business, University of Georgia, found that under typical conditions, the annual per person cost savings in fluoridated communities ranged from \$16 in very small communities (<5,000) to nearly \$19 for larger communities (>20,000). The analysis takes into account the costs of installing and maintaining necessary equipment and operating water plants, the expected effectiveness of fluoridation, estimates of expected cavities in non-fluoridated communities and treatment of cavities, and time lost visiting the dentist for treatment.

A related analysis found that children living in non-fluoridated communities in states that are highly fluoridated receive partial benefits of fluoridation from eating foods and drinking beverages processed in fluoridated communities. This second study, "Quantifying the Diffused Benefit from Water Fluoridation," was published in the March issue of *Community Dentistry and Oral Epidemiology*. The study reports that 12-year-old children living in

states where more than half of the communities have fluoridated water will have 26% fewer decayed tooth surfaces per year than 12-year-old children living in states where less than one-quarter of the communities are fluoridated.

"Widespread community water fluoridation prevents cavities even in neighboring communities that are not fluoridated," according to Dr. Susan Griffin, the study's main author. "For instance, a 12-year-old child who has lived in a non-fluoridated community in a highly fluoridated state would typically have one fewer cavity than a child in a low-fluoridated state."

The CDC Division of Oral Health currently provides support to 10 states and one Native American tribe to expand their community water fluoridation systems and operates a national fluoridation training and quality assurance program. CDC seeks to improve the oral health of communities by extending the use of proven strategies to prevent oral diseases, enhancing monitoring of oral diseases, strengthening the nation's oral health capacity, and guiding infection control in dentistry.

## Related Links

Recommendations for Using Fluoride to Prevent and Control Dental Caries in the United States .*MMWR*, Vol. 50, No. RR14;1-42. (August 17, 2001)

Water Fluoridation Fact Sheet, 2000

Water Fluoridation Fact Sheet, 1992

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Thank You;

W. J. Marley, D.D.S.

Opposition arguments to community  
water Fluoridation

# The Fluoridation War: a Scientific Dispute or a Religious Argument?

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Ernest Newbrun, DMD, PhD

## Abstract

*Communal water fluoridation is not considered controversial by the vast majority of the scientific community; however, politically it has persisted as an issue that many legislators and community leaders have avoided because of an aura of dispute. It has been a battleground for vigorous opposition by a very small but outspoken minority who have fought it with the dedication of religious zealots. This paper reviews the nature of the opposition, who they are, the broad thrust of their arguments, some of the specific issues they have raised, and their techniques. [J Public Health Dent 1996;56(5):246-52]*

*Key Words: AIDS, anti-fluoridationists, cancer, courts, dental caries, effectiveness, community water fluoridation, safety.*

When I was invited to participate in this symposium celebrating the 50th anniversary of controlled communal water fluoridation at Grand Rapids, Michigan, I was asked to discuss the opposition to this measure. Fortunately, I was given carte blanche on how to address this topic and I confess the title is of my own choosing. Professor Donald McNeil has referred to "the fight for fluoridation" and described it as "America's longest war" (1). He went on to state that "a few things remain constant in America—death, taxes, baseball, and since 1950, widespread, often successful efforts by a passionate minority to keep fluoride out of public drinking water" (1).

Health professionals and biomedical researchers see water fluoridation as a scientific issue, and almost all agree that questions about its efficacy and safety were more than adequately settled long ago. Opponents, however, object to fluoridation on philosophical principles concerning the rights of individuals to freedom of choice on health matters. With the exception of some Christian Scientists, few oppose it on strictly religious grounds, but many of those opposed to fluoridation are willing to fight with the dedication of religious zealots—hence the title of my lecture. In this review I will exam-

ine the nature of the opposition, who they are, the broad thrust of their arguments, some of the specific issues they have raised, and their techniques.

## The Anti-fluoridationists

When Trendley Dean, Philip Jay, and John Knutson met with the mayor of Grand Rapids 50 years ago to gain his approval for a water fluoridation experiment, no opposition existed to becloud the issue (2). However, complaints of ill effects due to water fluoridation were reported shortly after January 1, 1945, the official starting date. These complaints included: "Since they've been adding fluoride in our drinking water I have been gaining weight rapidly," and "Bathing in fluoridated water is causing a rash all over my body." Owing to delays in delivery of the equipment, fluoridation did not actually start in Grand Rapids until January 25, yet the complaints preceded the implementation of water fluoridation! Initially the complaints came from isolated individuals, but eventually there grew to be an organized network of hard-core opposition to this public health measure, not only at a local level, but at national and international levels. This opposition is not altogether surprising from a historical perspective, as there

was opposition in the 1920s to pasteurization of milk and immunization of children against diphtheria and smallpox. Similarly, at the turn of the last century there existed fierce opposition to chlorination of the drinking water. More recently, gene splicing and organ transplantation have encountered some hostility. In all of these cases, the opposition perceives these procedures not as advances in public health and preventive medicine, but rather as "tampering with nature" and as forced medication.

At a national level, the anti-fluoridationists include the National Health Federation, the Center for Health Action, Citizens for Health, and the Safe Water Association. Their activities are detailed elsewhere (3,4). The *National Fluoridation News* was published quarterly "in the interest of all organizations and individuals concerned with keeping our drinking water free of chemicals not needed for purification" and was illustrated with clever cartoons ridiculing academia, the health establishment, government, and industry for their endorsement of fluoridation. In addition, local "pure water" associations have been organized to prevent fluoridation, their name itself being something of a misnomer as there are over 40 different chemicals, apart from fluoride, that are commonly used in water treatment plants to make water potable (5).

It is important to distinguish people who have voted against this measure in referenda but have not been active opponents from those in the much smaller but extremely vociferous group who are the real "anti-fluoridationists." According to most opinion surveys conducted between 1952 and 1977, the anti-fluoridationists constituted about 10 to 20 percent of the US population (6). In a more recent survey of parents' attitude toward fluoridated

California, a state that ranks near the bottom (46th) in the nation with respect to percent of the population (18%) enjoying the benefits of water fluoridation, I have been called upon to participate as a scientific expert on fluoridation in several city council or water authority hearings in Los Angeles, Marin County, and the East Bay Municipal Water District, as well as to testify to the California legislature. In addition, I have testified to a committee of the US Congress, in the Queen's Court in Canada, and the Ministry of Health in Chile, and I have submitted written testimony to a Royal Commission in Victoria, Australia. I have debated anti-fluoridationists on television and radio and appeared on call-in radio programs to answer questions about fluoridation. I have heard or read most of the arguments that the opponents have presented, although I confess I have never heard them specifically claim that fluoridation causes nymphomania and satyriasis, as others have reported (2). I feel I have been in the trenches in this fluoridation war for most of my professional life. Although the specific arguments of the anti-fluoridationists may change with the *Zeitgeist*, the basic tenets have changed very little over the years. They are as follows: fluoride is a poison and causes deleterious health effects, fluoride is ineffective in preventing decay, fluoridation is costly, and fluoridation interferes with freedom of choice and infringes on individual rights (Table 2).

**Claims that Fluoride is Harmful.** Opponents identify fluoride as a poison both specifically as being toxic and generally as being responsible for a wide spectrum of common ills including allergy, birth defects, cancer, and heart disease, as well as rarer conditions such as crib death, immune deficiency, and Gilbert's syndrome (20). Anti-fluoridation propaganda frequently shows fluoride with a skull and crossbones, labeled poison, ignoring the matter of dosage. When anti-fluoridationists speak about fluoride, they compare it with lead and arsenic (17,21), rather than with essential elements such as iodine, zinc, or iron, or with Vitamins A and D, which are also toxic in excess. Waldbott, one of the earlier physicians to oppose fluoridation, listed the illnesses attributable to "artificial" fluoridation as: stomach and intestinal, stomatitis, polydipsia,

**TABLE 2**  
**Principal Antifluoridation Arguments and Profluoridation Answers**

Antifluoridation Arguments	Profluoridation Answers
Poison	Safe at 0.7-1.2 ppm
Ineffective	15-40% less caries
Delays caries	Less caries at all ages
Costly	Cheap 25¢ (median/person/year) 50¢ (mean/person/year)
Freedom of choice	Individual restraints in the interest of community public health
Individual rights	

**TABLE 3**  
**Expert Reports on the Safety, Risks, and Benefits of Water Fluoridation**

Year	Organization	Ref
1957	Commission of Inquiry, New Zealand	25
1968	Royal Commission of Tasmania, Australia	26
1970	World Health Organization, Geneva, Switzerland	27
1976	Royal College of Physicians, London, UK	28
1977	National Academy of Sciences, Washington, DC	29
1977	Commission of Inquiry, Victoria, Australia	30
1982	International Agency for Research on Cancer, Geneva, Switzerland	31
1985	Department of Health, San Francisco, California	32
1985	Working Party (Knox), London, UK	33
1990	State Department of Health, New York	34
1991	National Health and Medical Research Council, Canberra, Australia	35
1991	US Public Health Service (Young), Washington, DC	36

joint pains, migraine-like headaches, visual disturbances, tinnitus, and mental depression (22). Regrettably, all too often these illnesses are reported as anecdotal cases that are not based on randomized clinical trials. Such uncontrolled or poorly controlled observations can be dismissed.

It is beyond the scope of this review to respond to all the health-related claims of anti-fluoridationists; these have been amply detailed elsewhere (23,24). Reports of independent expert in relevant fields of medicine and epidemiology, as well as scientists and water engineers, have been unanimous that the benefits of water fluoridation far outweigh any potential risks. Data concerning the safety of water fluoridation have been reviewed repeatedly by international, national, state, and local authorities (25-36). Scientists have recently reviewed the results of more than 50 epidemiologic studies on the relation-

ship between fluoride concentrations in the drinking water and the risk of human cancer, as well as animal toxicity data (37). The conclusion of all of these reports has been uniform: there are no significant health risks associated with water fluoridation at an optimal level (Table 3). At optimal fluoride concentration the growth, health, and development of children is normal. Claims of carcinogenicity, teratogenicity, genotoxicity, and the like have not been substantiated under rigorous scientific examination. Mortality rates and other health statistics (other than dental caries) in fluoridated and nonfluoridated communities are similar. No injury from optimally fluoridated water has been proven to date. Dental fluorosis, mostly of the very mild to mild degree, may occur in some of the population, but this is primarily a cosmetic issue and not an adverse health effect.

**Claims that Fluoridation is Ineffec-**

memorate the 50th anniversary of water fluoridation—hardly a controversial issue considering that the postal service has issued commemorative stamps for Elvis Presley and Marilyn Monroe, both of whom died of a drug overdose. Other countries have issued postage stamps recognizing water fluoridation. Apparently the members of the US Postal Commission were "neutralized" and have as yet refused to issue a fluoridation commemorative stamp.

In September 1984, Wendy Nelder, a member and at that time president of the San Francisco Board of Supervisors, requested an investigation into fluoridation as a cause of increased risk of AIDS, cancer, and other diseases (18). In a debate on the "Today" television show, she stated that the death rate in fluoridated communities was 300 percent higher than in non-fluoridated ones and subsequently claimed an "overwhelming increase of the death rate from heart disease in fluoridated areas" (52). In a few minutes she was able to present much misinformation that would require a much longer time to refute. Nelder was referring to the Bartlett (8 ppm F)—Cameron (0.4 ppm F) study in Texas of residents who had lifelong exposure to natural fluoride (53). In the ten-year period from 1943 to 1953, 14 persons died in Bartlett whereas only 4 persons died in Cameron, hence the "300 percent" increase (Table 6). What she failed to inform the viewers was that in Bartlett, 15 percent of the population in 1943 and 12 percent of the population in 1953 were older than 70 years of age, while in Cameron during the same time span only 4 percent were older than 70 years of age (Figure 2). No wonder there was a higher death rate in the fluoridated community! Such tricks of lying with statistics are not new (54); nevertheless, the use of uncorrected data, particularly in relation to cancer deaths, is typical of the opposition, and was used most effectively in the Los Angeles referendum in 1975 (55).

Another convincing example of why not to debate with opponents of fluoridation comes from San Antonio, where in October 1985, on the eve of a referendum, proponents and opponents of fluoridation participated in a televised debate. The station manager required that all debaters be San Antonio residents, which disqualified Dr.

TABLE 5  
Techniques Used by Opponents to Prevent Fluoridation

- Neutralizing politicians: creating the semblance of "controversy" by using massive letter-writing campaigns, telephone calls, and even threats
- The big lie: alleging serious health hazards, including many different diseases attributed to fluoridation
- Half-truths: fluoride is a poison and causes dental fluorosis
- Innuendo: urging fluoridation be delayed until all doubts are resolved
- Statement out of context: citing only a portion of a study and misrepresenting the conclusions
- "Experts" quoted: all doctors are considered equal by viewers of TV or newspaper readers; some dentist, physician, or scientist can always be found who will oppose fluoridation
- Conspiracy gambit: health establishment, government, and industry are in cahoots
- Scare words: pollutant, toxic waste, cancer, artificial, chemical
- Debating the issue: debates give the illusion of scientific controversy, even though the vast majority of health professionals and scientists support fluoridation

FIGURE 2  
Comparison of Age Distribution of Population 70 Years and Older in Bartlett (7.6–8.2 ppm F) and Cameron (0.4–0.5 ppm F) [Data from Leone et al. (53)]

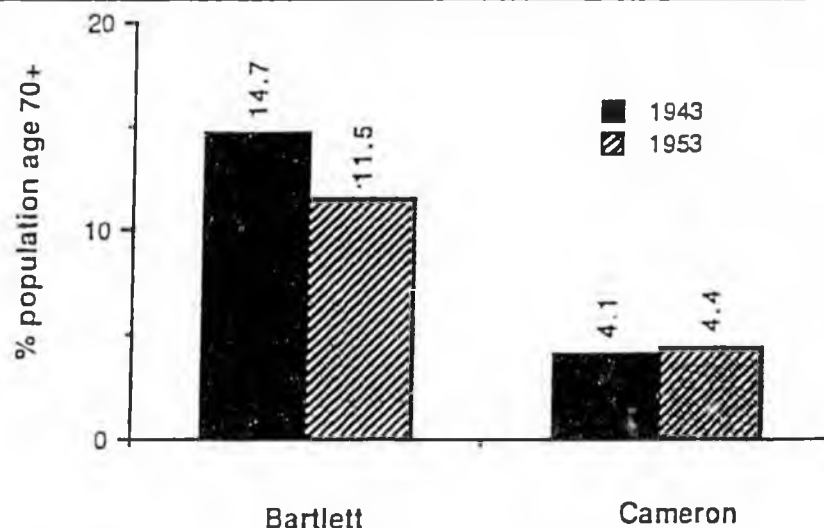


TABLE 6  
Number of Participants in 10-year Medical/Dental Study of Residents in Bartlett and Cameron, Texas, with High and Low Levels of Natural Fluoride\*

	Bartlett (8 ppm F)	Cameron (0.4 ppm F)
1943	116	121
1953	96	113
Deceased	14	4

\*Data from Leone et al. (53).

C. Everett Koop, the prestigious Surgeon General who supported fluoridation. However, John Yiamouyannis, who lives in Ohio, showed up at the station with a San Antonio voter reg-

istration card and was allowed to debate. The anti-fluoridationists took the night with a barrage of assertions phrased in scare rhetoric that were difficult to refute in 30 seconds or less and

33. Knox EG. Fluoridation of water and cancer: a review of the epidemiological evidence. Report of the working party. London, UK: Her Majesty's Stationery Office, 1985.
34. Kaminsky LA, Mahoney MC, Leach J, Melius J, Miller MJ. Fluoride benefits and risks of exposure. *Crit Rev Oral Biol Med* 1990;1:261-81.
- (10) 35. National Health and Medical Research Council. The effectiveness of water fluoridation. Canberra, Australia: Australian Government Publishing Service, 1991.
36. US Department of Health and Human Services. Review of fluoride—benefits and risks. Report of ad hoc subcommittee, Committee to Coordinate Environmental Health and Related Programs, US Public Health Service. Washington, DC: US Government Printing Office, 1991.
37. National Research Council. Health effects of ingested fluoride. Washington, DC: National Academy Press, 1993.
38. Diesendorf M. The mystery of declining tooth decay. *Nature* 1986;322:125-9.
39. Sutton PRN. Fluoridation: errors and omissions in experimental trials. 2nd ed. Melbourne, Australia: Melbourne University Press, 1960.
40. Ast DV, Smith DJ, Wachs B, Canwell KT. Newburgh-Kingston caries fluorine study. XIV. Combined clinical and roentgenographic dental findings after 10 years of fluoride experience. *J Am Dent Assoc* 1956;52:314-25.
41. Jackson D, James PMC, Wolfe WB. Fluoridation in Angelsey. *Br Dent J* 1975;138:165-71.
42. Hardwick J, Teasdale J, Bloodworth G. Caries increment over 4 years in children aged 12 at the start of water fluoridation. *Br Dent J* 1982;153:217-22.
43. Jackson D, James PMC, Thomas FD. Fluoridation in Angelsey 1983: a clinical study of dental caries. *Br Dent J* 1985;158:45-9.
44. Thomas FD, Kassab JY. Fluoridation in Angelsey 1983: a clinical study of dental caries in mothers at term. *Br Dent J* 1992;173:136-40.
45. O'Mullane D, Clarkson J, Holland T, O'Hickey S, Whelton H. Children's dental health in Ireland. 1984. Dublin, Ireland: Government Publications, 1986.
46. Evans DJ, Rugg-Gunn AJ, Tabari ED. The effect of 25 years of water fluoridation in Newcastle assessed in four surveys of 5-year-old children over an 18-year period. *Br Dent J* 1995;178:60-4.
47. Newbrun E. Effectiveness of water fluoridation. *J Public Health Dent* 1989;49:279-89.
48. Anonymous. Results of opinion survey on attitudes of opponents of fluoridation. *Nat Fluoridation News* 1972;18(1):2-4.
49. Opinion of Lord Jauncy *in causa* Mrs. Catherine McColl against Strathclyde Regional Council, June 29, 1983. Strathclyde Regional Council 1983.
50. Easley MW. The new antifluoridationists: who are they and how do they operate? *J Public Health Dent* 1985;45:133-41.
51. Sprague B, Bernhardt M. The tooth robbers. In: Barrett S, Jarvis WT, eds. *The health robbers*. Amherst, NY: Prometheus Books, 1993:295-305.
52. Nelder W. Industrial world has outlawed drinking fluoridated water. *San Francisco Business J* 1985;Jul 29:5.
53. Leone NC, Shimkin MB, Arnold FA, et al. Medical aspects of excessive fluoride in a water supply. A ten-year study. In: Shaw JH, ed. *Fluoridation as a public health measure*. Washington, DC: American Association for the Advancement of Science, 1954:110-30.
54. Huff. How to lie with statistics. New York, NY: WW Norton, 1993.
55. Newbrun E. Achievements of the seventies: community and school fluoridation. *J Public Health Dent* 1980;40:234-47.
56. Scudder JH, Spitzer N. San Antonio's battle over fluoridation. *Wilson Q* 1987;11:162-71.
57. Medawar PB. *The limits of science*. New York, NY: Harper and Row, 1984.