Water Fluoridation
2015

Ronald S. Wilson, DMD
140 Mall Connector Rd
Greenville, SC
Seventy years ago, Grand Rapids, Michigan became the world’s first city to adjust the level of fluoride in its water supply. Since that time, fluoridation has dramatically improved the oral health of tens of millions of Americans. Community water fluoridation is the single most effective public health measure to prevent tooth decay. Additionally, the Center for Disease Control and Prevention proclaimed community water fluoridation as one of 10 great public health achievements of the 20th century.

Fluoridation of community water supplies is simply the precise adjustment of the existing naturally occurring fluoride levels in drinking water to an optimal fluoride level recommended by the U.S. Public Health Service (0.7 per million) for the prevention of dental decay. The EPA has deemed that 4ppm (roughly 6x more) as the maximum contaminant level of F in NATURALLY-OCCURRING water.
Fluoride

*Fluorine is a chemical element* (symbol F) and atomic number 9. *Fluoride is the negative ion of the element fluorine.* Any compound, whether it is organic or inorganic, that contains the fluoride ion is also known as a fluoride. Examples include CaF$_2$ (calcium fluoride) and NaF (sodium fluoride). Ions containing the fluoride ion are similarly called fluorides (e.g., bifluoride, HF$_2^-$).

To say that an inhaled anesthetic is a fluoridated compound and thereby any form of fluoride is a sedative is categorically untrue.
Did you see the period on the last page? Rest assured it is there. What we are discussing here is essentially the same size as that period in a field of green. Not even one full part per million parts water. Is that too much to ask to protect the dental health of our most precious commodities, our children and our elderly?
Fluorosilicic acid: a water-based solution used by most water systems in the United States. Fluorosilicic acid is also referred to as hydrofluorosilicate, FSA, or HFS. When added to water this simply breaks down to fluoride, hydrogen, and silica (sand).

The U.S. Food and Drug Administration (FDA) does not regulate additives used for community drinking water (i.e., tap water), because its regulatory reach concerns the safety and efficacy of food, drugs, or cosmetic-related products.

Some consumers have questioned whether fluoride from natural groundwater sources, such as calcium fluoride, is better than fluorides added "artificially," such as FSA or sodium fluoride. Two recent scientific studies, listed below, demonstrate that the same fluoride ion is present in naturally occurring fluoride or in fluoride drinking water additives and that no intermediates or other products were observed at pH levels as low as 3.5. In addition, the metabolism of fluoride does not differ depending on the chemical compound used or whether the fluoride is present naturally or added to the water supply.

You Aren’t Drinking Toxic Waste

Regulatory Scope on Additives

Since the early 1950s, FSA has been the main additive used for water fluoridation in the United States. The favorable cost and high purity of FSA make it a popular additive.

Consumers may raise concerns about arsenic in drinking water and that fluoride additives may contain some arsenic. The EPA allowable amount for arsenic in drinking water is 10 parts per billion. NSF quality testing has found that most fluoride additive samples do not have detectable levels of arsenic. For those samples that do have some amount of arsenic, the arsenic level that an average consumer would experience over an entire year of drinking water at a concentration of 1.2 mg/L fluoride is extremely small -- only about 1.2% of the EPA allowable amount.

The U.S. Environmental Protection Agency (EPA) has authority over safe community drinking water, as specified in the Safe Drinking Water Act. On the basis of the scientific study of potential harmful health effects from contaminated water, the EPA sets a Maximum Contaminant Level (MCL) concentration allowed for various organisms or substances.

http://www.cdc.gov/fluoridation/factsheets/engineering/wfadditives.htm
How Does Fluoride Work?

For the best prevention of cavities:
Both Systemic and Topical fluoride exposure are important:

Fluoride becomes incorporated into developing permanent teeth of children while still under gums—more resistant to cavities (systemic effect)

Frequent exposure to low concentrations of fluoride:
saliva, release from plaque-reducing acid attack leading to cavities (topical effect via systemic CWF)

Water fluoridation and dentifrices (toothpaste), fluoride mouthrinses, and professionally applied varnishes (topical and systemic effects from CWF and fluoride containing products)
Only Topical Claim Is False

To say that fluoride only works as a TOPICAL agent is false. **Systemic** fluorides are those ingested into the body. During tooth formation, ingested fluorides become incorporated into tooth structures. Fluorides ingested regularly during the time when teeth are developing (preeruptively) are deposited throughout the entire tooth surface and provide longer-lasting protection than those applied topically. It is a fact that fluorosed teeth are more caries resistant.

In addition to this, systemic fluorides can also give topical protection because **ingested fluoride is present in saliva**, which continually bathes the teeth providing a reservoir of fluoride that can be incorporated into the tooth surface to prevent decay.
A Public Health Problem

Tooth decay has decreased overall, however but this has been uneven across the general population.

Populations with increased risk:
1. Children
2. Elderly
3. Low socioeconomic status
4. Low level of parental education
5. Little if any access to dental care
6. Combinations of any of the above
CAVITIES: Disproportionately Distributed

- Nearly 80% of cavities occur in 20% of the population

The *poor* bear a disproportionate burden of cavities
In 1994, a study of 7-14 year-old children in Newburgh and non-fluoridated Kingston school districts was undertaken to determine changes in dental fluorosis and dental caries. These cities were chosen in 1945 for a community clinical trial of water fluoridation because of their similarities. Since 1945, however, the availability of fluoride from sources other than water in Kingston has increased, and the communities have become less similar in their population characteristics. Census data reveal that, in comparison with Kingston, Newburgh has a higher level of poverty (26% vs. 12%), a lower percentage of persons with a college-level education (29% vs. 43%), a lower percentage of whites in the population (51% vs. 87%), and a higher rate of unemployment (12% vs. 6%). Based on this to draw conclusions of CWF today are pointless and inaccurate.

The original study from 1950 even shows that the DMF rate (decayed, missing, filled) in first molars in Newburgh was 18% better than its non-fluoridated counterpart after only three years. The rates did stay the same after the first year but after years two and three there was noted marked changes in rates, further proof that a systemic effect was taking place.

The Newburgh-Kingston Caries Fluorine Study. I. Dental Findings after Three Years of Water Fluoridation*
David B. Ast, Sidney B. Finn, and Isabel McCaffrey

http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1528792/?page=4
Why Do Cavities Matter?

- Infection
- Extreme pain
- Difficulty in chewing
- Poor weight gain
- Difficulty concentrating
- Missed school hours
- Predictor of cavities in later life
- Costly treatment
- LIFE THREATENING
- DEATH

Deamonte Driver, 12, died February 25, 2007, after an infection from a molar spread to his brain
Key Issues For Vulnerable Children

Race- Black children are more likely than white children to have untreated cavities

Free/Reduced Lunch- Children and teens in this program are more likely to have decay than those that do not participate

Rural/Urban Environment- Rural children are more likely to have more untreated decay than urban children
According to *high-schools.com* the percentage of Greer High School students on free and reduced lunch assistance (51.4%) is **slightly higher** than the state average of 51.1%. This may indicate that the area has a **higher level of poverty** than the state average. This number has increased sharply from 33.6% in 2005.

To extrapolate this one can assume that slightly over half of the children in Greer area schools are below the poverty level and are at an increased risk for dental disease with these numbers increasing every year.
Studies conducted throughout the past 70 years have consistently indicated that fluoridation of community water supplies is safe and effective in preventing dental decay in both children and adults. 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).

Early studies, such as those conducted in Grand Rapids, showed that water fluoridation reduced the amount of cavities children get in their baby teeth by as much as 60% and reduced tooth decay in permanent adult teeth nearly 35%. *Today, studies prove water fluoridation continues to be effective in reducing tooth decay by 20-40%, even in an era with widespread availability of fluoride from other sources, such as fluoride toothpaste.*
The average cost for a community to fluoridate its water is estimated to range from approximately $0.50 a year per person in large communities to approximately $3.00 a year per person in small communities. For most cities, every $1 invested in water fluoridation saves $43 in dental treatment costs.
As a dentist it would self-serving for me to stand before you and ask for you not to fluoridate the water supply as it would be a benefit to my practice. Research shows in communities where they remove Fluoride the decay index increases. But as a health care provider it is my mandate to do whatever is in my power to improve the health of my patients and those in my community.
There have been multiple studies in communities worldwide where fluoride has been removed. They all show an increase in decay in both children and the adult population. (1979- For example in Wick, Scotland F levels were allowed to return to the natural level of .2ppm and five years later resulted in increase of decay of 27% and 40% in adult and baby teeth respectively)
This is what we must contend with
Dental Disease Not Just A Childhood Issue
Aging Population + Socioeconomic Constraints = Medical and Dental Crisis
The Aging U.S. Population

% of U.S. population age 65 and over

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Sources: Census Bureau, Moody's Analytics

Moody's Analytics

AMERICA IS AGING
By 2030, the U.S. population aged 50 or over will increase to 132 million. In this time, the number of adults aged 65-74 will nearly double from 21.7 million in 2010 to 38.6 million in 2030.

132 million
In the next 20 years, the population aged 50+ will increase from 109 million to 132 million.

1 in 5 people will be 65 and over in 2030.

1 in 8 people will be 75 and over in 2040.
Systemic Link
research strongly suggests oral bacteria may contribute to:

• Cardiovascular Disease
• Diabetes
• Pre-Term/Low Birth Wt. Babies
• Atherosclerosis
• Osteoporosis
• Stroke
• Stomach Ulcers
• Pneumonia
Gum Disease Can Kill More Than Your Smile

Bacteria that builds up between the tooth and gum can enter into the bloodstream whenever your gums bleed. This bacteria can travel throughout the body and cause serious health problems.

STROKE
A new study of fatty deposits lodged in the carotid arteries of stroke sufferers shows that up to 40% of the bacteria that cause the fatty deposits comes from the mouth if the gums are inflamed.

RESPIRATORY DISEASE (3rd most common cause of death)
Dental plaque harbors a high number of respiratory pathogens that can be aspirated and, in turn, increase the risk in susceptible patients for pneumonia, emphysema and chronic obstructive lung disease.

HEART DISEASE
Bacteria from the mouth can get into the bloodstream when the gums are inflamed. This bacteria can get mixed up with blood clotting cells called platelets. These clumps of cells and bacteria can lodge inside the walls of the blood vessels, causing heart stopping clots to form. These clots are what lead to heart disease. Keeping your gums healthy can reduce your risk of a heart attack.

DIABETES (pancreas)
The presence of any gum inflammation can make it much more difficult for a diabete to control their blood sugar. Elimination of any gum inflammation can directly improve diabetic control. A study of 48,000 men (Health Professionals Study 1986-2002) found that men who had periodontal disease had a 65% higher risk of developing pancreatic cancer than men with healthy gums.

ULCERS (stomach)
The bacteria that collect in your mouth when gum disease is present are the same bacteria that cause gastric ulcers. If the bacterial count in the mouth is high these bacteria can be constantly travelling to the stomach, reinfecting and causing a return of ulcers.

OSTEOPOROSIS
Periodontal disease may play a role in promoting osteoporosis. With tooth loss there is a decrease in proper digestion, nutrition and calcium uptake.

ARTHRITIS
There is a strong relationship between the extent and severity of periodontal disease and Rheumatoid Arthritis.

PRE-TERM BIRTHS
Women with gum disease are seven to eight times more likely to give birth prematurely to low birth weight babies. Researchers believe that the low grade gum inflammation causes the body to release inflammatory chemicals which are linked to pre-term birth.
Let’s Look At Real Numbers

In the past fifteen years (2000 through 2014), more than 449 U.S. communities in 42 states have voted to adopt or retain successful fluoridation programs. In just the past month both Austin, TX and Denver, CO. Decided to retain the practice. Denver alone provides fluoridated water to over 1.3 million people in the Denver area, and Austin supplies approximately another million.
Clarksburg (To retain) 2013 Keyser (To retain) 2013 Martinsburg (To retain) 2013
Washington Authority (To retain) 2011 Nelson County Service Authority 2011 Staunton (To retain) 2009 Timberville (To retain) 2009 Brookneal 2007 Cumberland County 2007
Bradford 2013 Proctor (To retain) 2010 Newbury (To retain) 2009 Bradford (To retain) 2008 Randolph (To retain) 2008 ... Falls (To retain) 2006 Montpelier (To retain) 2006 Burlington (To retain) 2005 Pownal 2000 Hinesburg 1999 Randolph 1998
Aiken (To retain) 2011 Dillion (To retain) 2007 South Carolina
Tyrone (To retain) 2013 Shippensburg (To retain) 2012 West Mannheim (to retain) 2012 Pottstown (To retain) 2009 Erie 2001 Allentown 1999 Allentown 1998
Ohio
Cape Fear Public Utility Authority 2009 Asheville (To retain) 2008 Hendersonville (To retain) 2008 Franklinton 1998 MOASA/Vass 1998 Richmond County (To retain) 2013 Raleigh (To retain) 2013 Broad River Water Authority (To retain) 2009 Nano-Filtration Plant,
Columbia (To retain) 2013 Easley (To retain) 2013 St. Joseph (To retain) 2012 Bedrock (To retain) 2011 Lochery (To retain) 2011 Hebler (To retain) 2011 St. Roberts (To retain) 2010 Kaycee 2010 Medora (To retain) 2010 Carrolton (To retain) 2008 Virginia
Valparaiso (To retain) 2014 Huntingburg (To retain) 2010 Greenville 2010 Telford (To retain) 2008 Angola (To retain) 2008 Fort Smith (To retain) 2008 Mildale (To retain) 2008 West Lampeter 2008 Allentown 2008
Maine
Crowley (To retain) 2009 Walker 2007 Crowley 2004 Plaquemines Parish 1998
Salina (To retain) 2014 Cheney (To retain) 2012 Topeka 2012 Olathe 2012 Kansas City (To retain) 2001 Kansas City (To retain) 2000 South Sioux City 1999
Texas
Santa Fe (To retain) 2013
New Mexico
Hightstown 2012 Atlantic City 2008 Jersey City 2002 South Brunswick 1999
New Jersey
New Hampshire
Clark County/Las Vegas (To retain) 2000 Clark County/Las Vegas (state law passed) 1999
Missouri
Ripton (To retain) 2013 St. Helena (To retain) 2013 Homestead 2013 Lawton 2013 Kansas City (To retain) 2001 Kansas City (To retain) 2000 Grand Forks 1999 Platte 1999 St. Louis 1999 St. Louis 1998
Iowa
Minnesota
Virginia
City of Vaiden 2012 City of Pass Christian 2011 Crooked Creek Water Association 2011 East Leflore County Water & Sewer District 2011 City of Bay St. Louis 2010 City of Bruce 2010 City of Waveland 2010 D'Iberville Water and Sewer District 2010 Hancock Water and Sewer District 2010
Massachusetts
Lewiston (To retain) 2011
California
Vallejo 1999 Berkeley 1999 Emeryville 1999
Oregon
Madison (To retain) 2012 Russellville (To retain) 2008 North Baldwin Utilities (To retain) 2007
North Dakota

Ohio
Lebanon 2012 Northern Area Water Authority 2007 Delaware 2000

Oklahoma

Oregon
Sweet Home (To retain) 2014 Scappoose (To retain) 2013 The Dalles (To retain) 2013 Philomath 2012 Portland (City Council vote) 2012

Public Vote 2013 reversed 2012 vote
Keizer (To retain) 2010 McMinnville (To retain) 2010 Beaverton 2002 Lebanon 2000

Pennsylvania
Tyrone (To retain) 2013 Shippensburg (To retain) 2012 West Mannheim (to retain) 2012 Pottstown (To retain) 2009 Erie 2001 Allentown 1999 Allentown 1998

South Carolina
Aiken (To retain) 2011 Dillon (To retain) 2007

Tennessee
South Blount County Utilities District
(To retain) 2013 Selmer (To retain) 2009 Shelbyville City (To retain) 2009 Union City (To retain) 2009 South Blount County 2008

Texas

Utah
Davis County (Layton) (To retain) 2004 Salt Lake County (Salt Lake City) 2001 Davis County (Layton) 2000

Virginia
Albemarle County (To retain) 2012 City of Charlottesville (To retain) 2012 Blacksburg-Christiansburg-VPI Water Authority (To retain) 2011 Nelson County Service Authority 2011 Staunton (To retain) 2009 Timberville (To retain) 2009 Brookneal 2007 Cumberland County 2007

Washington

West Virginia
Clearfork (To retain) 2013 Keyser (To retain) 2013 Martinsburg (To retain) 2013 Clarksburg (To retain) 2009 Clay Municipal Water Works 2007

Wisconsin
Current Research Supporting CWF


Community effectiveness of public water fluoridation in reducing children's dental disease.
Armfield JM.

Abstract

OBJECTIVES:
Water fluoridation is one of the most effective public health programs of the past century. However, efforts to extend water fluoridation into currently non-fluoridated areas are often thwarted. Despite considerable evidence regarding the effectiveness of water fluoridation at an individual level, published national community-based studies are rare. This study compared children's decay experience and prevalence between areas with and without water fluoridation in Australia.

METHODS:
Oral health data were obtained from clinical examinations of 128,990 5- to 15-year-old children attending for a regular visit with their respective Australian state or territory School Dental Service in 2002. Water fluoridation status, residence remoteness, and socioeconomic status (SES) were obtained for each child's recorded residential postcode area.

RESULTS:
Children from every age group had greater caries prevalence and more caries experience in areas with negligible fluoride concentrations in the water (<0.3 parts per million [ppm]) than in optimally fluoridated areas (> or = 0.7 ppm). Controlling for child age, residential location, and SES, deciduous and permanent caries experience was 28.7% and 31.6% higher, respectively, in low-fluoride areas compared with optimally fluoridated areas. The odds ratios for higher caries prevalence in areas with negligible fluoride compared with optimal fluoride were 1.34 (95% confidence interval [CI] 1.29, 1.39) and 1.24 (95% CI 1.21, 1.28) in the deciduous and permanent dentitions, respectively.

CONCLUSIONS:
This study demonstrates the continued community effectiveness of water fluoridation and provides support for the extension of this important oral health intervention to populations currently without access to fluoridated water.
Arguments Against And Data For
Systemic Health Effects

Following an in-depth review of existing research on the health effects of community water fluoridation, *Ireland's Health Research Board* released a report, "Health Effects of Water Fluoridation," and concluded that the literature found no strong evidence that community water fluoridation is definitively associated with negative health effects. The review was not designed to make any conclusions on the impact of community water fluoridation on dental health. The Ireland Department of Health asked the Health Research Board in 2014 to determine the positive or negative impact on the systemic health, including oral health but excluding dental health, of the population for those exposed to artificially fluoridated water between 0.4 and 1.5 parts per million (ppm). [http://www.hrb.ie/publications/hrb-publication/publications//674/](http://www.hrb.ie/publications/hrb-publication/publications//674/)
The British Thyroid Association confirmed in 2006 that there was no association between fluoride levels in water and thyroid disease. In an effort to determine if fluoride in drinking water affects the function, shape and size of the thyroid gland, researchers conducted a study comparing one group of people who consumed water that contained natural fluoride levels of 3.48 ppm and one group who consumed water with extremely low fluoride levels of 0.09 ppm. The researchers noted that all study participants had been residents of their respective communities for more than 10 years. The researchers concluded that prolonged ingestion of fluoride at levels above optimal to prevent dental decay had no effect on thyroid gland size or function. This conclusion was consistent with earlier animal studies.

It was used in one small trial in the 1950’s to see if it’s use could help in patients with hyperthyroidism. In this study 15 patients who had hyperthyroidism (an over active thyroid) were given relative large amounts of sodium fluoride orally or by injection in an effort to inhibit the thyroid’s function. The researchers concluded that efforts to treat hyperthyroidism with fluoride was successful only occasionally among persons subjected to massive doses of fluoride. This study does not support claims that low fluoride levels in drinking water would cause hypothyroidism (an under active thyroid).
In Feb of 2015 there was one article that shows a small link between fluoride and hypothyroidism. It should be noted, however, that it did not undergo typical peer review prior to being published and it was written by Professor Stephen Peckham, a leading anti-fluoridationist in England.

“The authors’ provide an unbalanced assessment of the effects of fluoridation on hypothyroidism in their “introduction”, “discussion” and “interpretation” sections. They reference the National Research Council (U.S), 2006 (Fluoride in Drinking Water: A Scientific Review of EPA’s Standards) as evidence for a link between fluoride exposure and hypothyroidism. Their assessment is misleading for three reasons:

1. The authors’ of the NRC report explicitly state that "this report does not evaluate nor make judgments about the benefits, safety, or efficacy of artificial water fluoridation" (National Research Council, 2006, p. 16) and also that "committee's conclusions regarding the potential for adverse effects from fluoride at 2 to 4 mg/L in drinking water do not address the lower exposures commonly experienced by most U.S. citizens" (National Research Council, 2006, p. 11).

2. They fail to mention that most of the included studies in the NRC report showed no association between fluoride exposure and thyroid function.

3. They also fail to report three scientific reviews that have concluded insufficient evidence of association between exposure to fluoride in drinking water and adverse thyroid effects.”

*Peel Public Health  Feb 26, 2015*
Has No Affect On Adult Teeth

J Dent Res. 2007 May;86(5):410-5.

Effectiveness of fluoride in preventing caries in adults.
Griffin SO1, Regnier E, Griffin PM, Huntley V.

Abstract
To date, no systematic reviews have found fluoride to be effective in preventing dental caries in adults. The objective of this meta-analysis was to examine the effectiveness of self- and professionally applied fluoride and water fluoridation among adults. We used a random-effects model to estimate the effect size of fluoride (absolute difference in annual caries increment or relative risk ratio) for all adults aged 20+ years and for adults aged 40+ years. Twenty studies were included in the final body of evidence. Among studies published after/during 1980, any fluoride (self- and professionally applied or water fluoridation) annually averted 0.29 (95%CI: 0.16-0.42) carious coronal and 0.22 (95%CI: 0.08-0.37) carious root surfaces. The prevented fraction for water fluoridation was 27% (95%CI: 19%-34%). These findings suggest that fluoride prevents caries among adults of all ages.

Comment in
- Fluoride prevents caries among adults of all ages. [Evid Based Dent. 2007]
Those opposed to fluoridation continue to compile and circulate studies reportedly supporting the theory that fluoridation causes lower IQ in children. The studies often cited are from China, India, Iran and Mexico where social and environmental conditions are not similar to those in the US. The vast majority of the studies have never been published in peer-reviewed, English language journals. Those opposed to fluoridation in the U.S. paid to have the foreign studies, which supported their antifluoridation position, translated from Chinese to English. The quality of these studies does not stand up to scientific scrutiny.

In 2014, a scientific review commissioned by the New Zealand Prime Minister's Chief Science Advisor and the President of the Royal Society of New Zealand concluded: “There is no convincing evidence of neurological effects at fluoride concentrations achieved by CWF.” In addition to citing numerous weaknesses of the studies from China and other countries, the review noted a 2014 New Zealand study that followed a group of people born in the early 1970s and measured childhood IQ at the ages of 7, 9, 11 and 13 years and adult IQ at the age of 38 years. Early-life exposure to fluoride from a variety of sources was recorded, and adjustments were made for factors potentially influencing IQ. This extensive study revealed no evidence that exposure to water fluoridation in New Zealand affects neurological development or IQ.
Abstract

Objectives. This study aimed to clarify the relationship between community water fluoridation (CWF) and IQ. Methods. We conducted a prospective study of a general population sample of those born in Dunedin, New Zealand, between April 1, 1972, and March 30, 1973 (95.4% retention of cohort after 38 years of prospective follow-up). Residence in a CWF area, use of fluoride dentifrice and intake of 0.5-milligram fluoride tablets were assessed in early life (prior to age 5 years); we assessed IQ repeatedly between ages 7 to 13 years and at age 38 years. Results. No clear differences in IQ because of fluoride exposure were noted. These findings held after adjusting for potential confounding variables, including sex, socioeconomic status, breastfeeding, and birth weight (as well as educational attainment for adult IQ outcomes). Conclusions. These findings do not support the assertion that fluoride in the context of CWF programs is neurotoxic. Associations between very high fluoride exposure and low IQ reported in previous studies may have been affected by confounding, particularly by urban or rural status.

Osteosarcoma

A study published in 2011 found that bone fluoride levels are not associated with osteosarcoma. A team of researchers from Harvard University, the Medical College of Georgia and the National Cancer Institute analyzed hundreds of bone samples from 137 patients with osteosarcoma and a control group (N=51) to measure fluoride levels in the bone. The study from nine U.S. hospitals over an eight-year period was considered the most extensive to date that examined a potential association between fluoride levels in bone and osteosarcoma; the results indicated no correlation. The study was the second of a two-part study implemented through a 15-year collaboration between the Harvard School of Dental Medicine and the three branches of the National Institutes of Health. The National Cancer Institute (NCI) approved the design of the study, and the NCI, the National Institute of Environmental Health Sciences (NIEHS), and the National Institute of Dental and Craniofacial Research (NIDCR) provided funding for the research. The cases for this study were recruited from existing cases between 1993 and 2000.
An assessment of bone fluoride and osteosarcoma.
Collaborators (9)

Abstract
The association between fluoride and risk for osteosarcoma is controversial. The purpose of this study was to determine if bone fluoride levels are higher in individuals with osteosarcoma. Incident cases of osteosarcoma (N = 137) and tumor controls (N = 51) were identified by orthopedic physicians, and segments of tumor-adjacent bone and iliac crest bone were analyzed for fluoride content. Logistic regression adjusted for age and sex and potential confounders of osteosarcoma was used to estimate odds ratios (OR) and 95% confidence intervals (CI). There was no significant difference in bone fluoride levels between cases and controls. The OR adjusted for age, gender, and a history of broken bones was 1.33 (95% CI: 0.56-3.15). No significant association between bone fluoride levels and osteosarcoma risk was detected in our case-control study, based on controls with other tumor diagnoses.

Fluoride levels in drinking water do not lead to a greater risk of primary bone cancer, a new study has found.

Researchers at Newcastle University found that higher levels of natural or artificial fluoride in drinking water in the UK had no impact on the incidence of either osteosarcoma or Ewing’s sarcoma in people aged 0-49.

The study, funded by charity Bone Cancer Research Trust (BCRT), analysed 2,566 osteosarcoma and 1,650 Ewing’s sarcoma cases during 1980 and 2005.
“The onset of menstruation in girls was selected as an index of the rate of sexual maturation, since the menarche is an event which is readily dated. The average age of the menarche was 12 years among the girls studied in Newburgh and 12 years 5 months in Kingston. No statistical significance could be demonstrated in this difference, nor in the difference between the two cities in proportion of girls who had passed the menarche.”

Newburgh-Kingston Caries-Fluorine Study XII. Pediatric Findings After Ten Years
E. Schlesinger M.D., D. Overton M.D., H. Chase M.Sc., and K. Cantwell B.A.
Dental fluorosis is a change in the appearance of the tooth enamel that only occurs when younger children consume too much fluoride, from any source, over long periods when teeth are developing under the gums.

The crown of the tooth (the part covered in enamel) is formed under the gums before the teeth erupt. Enamel formation of permanent teeth, other than third molars (wisdom teeth), occurs from about the time of birth until approximately eight years of age. Because dental fluorosis occurs only while teeth are forming under the gums, teeth that have erupted are not at risk for dental fluorosis; therefore, older children and adults are not at risk for the development of dental fluorosis. The vast majority of fluorosis in the United States is the very mild or mild type.

Very mild to mild fluorosis has no effect on tooth function and may make the tooth enamel more resistant to decay. A study published in 2009 investigated the relationship between dental fluorosis and tooth decay in U.S. schoolchildren. The study concluded that teeth with fluorosis were more resistant to tooth decay than were teeth without fluorosis. Not only should the cavity preventive benefits of fluoridation be considered when considering policy to introduce or retain water fluoridation, but also the cavity preventive benefits of mild dental fluorosis.
WHICH WOULD BE YOUR CHOICE???

Tooth Decay or Mild Dental Fluorosis
STATUS OF FLUORIDATION OUTSIDE THE UNITED STATES

The value of water fluoridation is recognized internationally. Countries and geographic regions with extensive water fluoridation include the U.S., Australia, Brazil, Canada, Chile, Columbia, Ireland, Israel, Malaysia, New Zealand, People’s Republic of China (Hong Kong only), Singapore and the United Kingdom.

For many countries, it has simply not been implemented for a variety of technical, legal, financial or political reasons. For example, when East Germany joined West Germany, the East German government was fluoridating their half of the county. When they reunited, fluoridation was stopped due to other financial needs.

Up until 2014, no country had imposed a “ban” on water fluoridation in its 70 year history.

On August 17, 2014, Israel’s new Health Minister Yael German issued a decision to prohibit the fluoridation of the nation’s drinking water. It should be noted that the newest Health Minister has begun the process of reinstating this practice.
It’s A Poison That Is Why It Is Labeled On Toothpaste

- It would take a 20kg child (~4 year old) ingesting 2 full tubes of Adult sized toothpaste at one setting to reach a lethal dose of fluoride.
- The sudsing agent and abrasive components of toothpaste would cause anyone ingesting excess toothpaste to throw up.

“To this day, according to the American Association of Poison Control Centers, there have not been any deaths or serious adverse reactions from ingestion of fluoride toothpastes” - Clifford W. Whall, Jr., PhD
Director of Acceptance Program
ADA Council on Scientific Affairs
April 2, 2012, email to Dr. Johnny Johnson
Abstract
AIM: This was to present a summary of the evidence from systematic reviews of the effectiveness and safety of water fluoridation.

METHODS: A search for relevant systematic reviews was conducted using the terms Fluoridation [Mesh] OR "water fluoridation" OR fluoridation OR (water AND fluoride) and was run from 01/01/2000 to 17/10/2008 in Pubmed, Embase, the Cochrane Database of Systematic Reviews and the Database of Abstracts of Reviews of Effects in the Cochrane Library. The quality of the systematic reviews was assessed using Scottish Intercollegiate Guideline Network (SIGN) methodology checklists for systematic reviews. Websites of guideline organisations were also searched for relevant evidence-based guidelines, which were appraised using the AGREE instrument.

RESULTS: Of the 59 publications identified, 3 systematic reviews and 3 guidelines were included in this review. While the reviews themselves were of good methodological quality, the studies included in the reviews were generally of moderate to low quality. The results of the three reviews showed that water fluoridation is effective at reducing caries in children and adults. With the exception of dental fluorosis, no association between adverse effects and water fluoridation has been established. Water fluoridation reduces caries for all social classes, and there is some evidence that it may reduce the oral health gap between social classes.

CONCLUSION: Water fluoridation, where technically feasible and culturally acceptable, remains a relevant and valid choice as a population measure for the prevention of dental caries.

PMID: 19772843 [PubMed - indexed for MEDLINE]

Added note- It is true. Much of Europe is not fluoridated. What the opposition fails to realize or admit is that it is mostly an infrastructure issue. They are not blessed with water systems as advanced as ours.
“We have done our level best to discourage opponents of fluoridation from using this emotive argument,” said Paul Connett, a chemist who directs the anti-fluoridation group Fluoride Action Network and recently co-authored a book called The Case Against Fluoride. “The historical evidence for this assertion is extremely weak. It is sad that the U.S. media has done such a bad job of educating the public on this issue that it is so easy for crazy ideas to fill the vacuum.”

Andy Hollinger of the U.S. Holocaust Museum also discredits this as does the leading expert on Nazi medical experimentation, Patricia Heberer.

Tampa Bay Times October 6, 2011
Report issued in March 2006
Focused on naturally occurring high levels of fluoride in drinking water. (~200,000 people, ~$4 million dollars spent on study)

**Reviewed studies:**

• Effects of Fluoride on Teeth
• Musculoskeletal Effects-NO!
• Reproductive and Developmental Effects-NO!
• Neurotoxicity and Neurobehavioral Effects-NO!
• Effects on the Endocrine System-NO!
• Effects on the Gastrointestinal, Renal, Hepatic, and Immune Systems-NO!
• Genotoxicity and Carcinogenicity-NO!

**States with high levels of fluoride naturally occurring:**

- S. Carolina 5.9 mg/L
- Virginia 6.3 mg/L
- Texas 8.8 mg/L
- Colorado 11.2 mg/L
- Oklahoma 12.0 mg/L
- New Mexico 13.0 mg/L
- Idaho 15.9 mg/L
Report issued in March 2006:

1. **No Health Effects** from fluoride in water at 2mg/L (2ppm)

2. Severe fluorosis is virtually zero at 2mg/L fluoride in water

**IMPORTANT NOTE:**
Community water fluoridation = 0.7ppm (mg/L)

- 1/3rd level at which severe fluorosis is virtually zero
2. No adverse health effects from drinking fluoridated water (CWF)
A Public Health Achievement

“Fluoridation is the single most important commitment a community can make to the oral health of its children and to future generations.” Dr. C. Everett Koop

“Fluoridation is the single most effective public health measure to prevent tooth decay and improve oral health over a lifetime, for both children and adults.”
David Satcher, MD, PhD

“Community water fluoridation is one of the most practical, cost-effective, equitable, and safe measures communities can take to prevent tooth decay and improve oral health. [E]ach generation born since the implementation of water fluoridation has enjoyed better dental health than the preceding generation.”
Dr. Vivek H. Murthy, MD, MPH
Surgeon General (2014-current)
Thank You