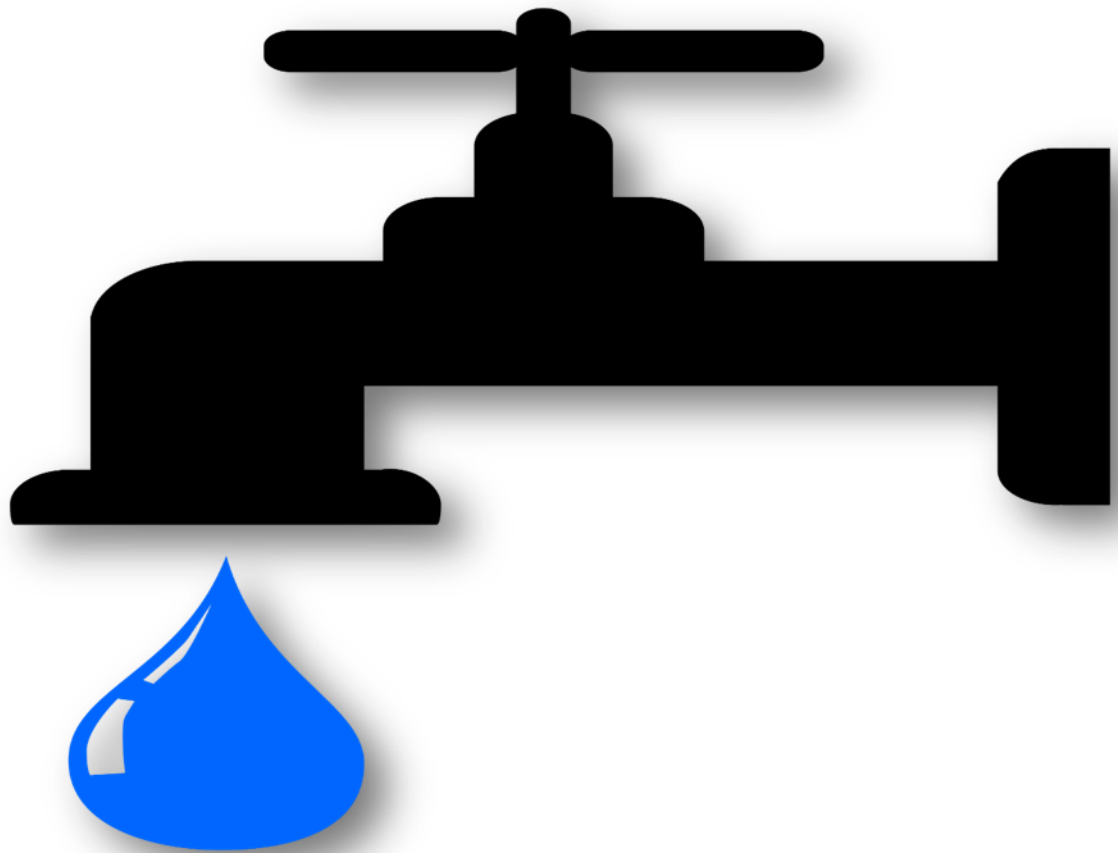


Community Water Fluoridation:

Resource Kit for Dentists, Providers and Local Communities



SOUTH CAROLINA
DENTAL ASSOCIATION

ADA

South Carolina
Oral Health
Advisory Council & Coalition

Introduction

In 2007, the South Carolina Dental Association (SCDA) developed a *Strike Force* which consisted of a small group of dentists who were poised to respond to local threats to water fluoridation in their communities. In 2008, the SCDA, the American Dental Association (ADA) and the South Carolina Department of Health and Environmental Control (DHEC) conducted the Community Water Fluoridation (CWF) training for SCDA members, dental hygienists, dental assistants and DHEC staff. Since its inception, the *Strike Force* has developed responses to CWF threats in several communities throughout the state.

In December 2015, the SCDA elevated its commitment to CWF by establishing a *Fluoride Committee* at its' SCDA House of Delegates meeting. The Committee, chaired by Dr. Ron Wilson from Greenville, consists of South Carolina dentists, Department of Health and Environmental Control – Division of Oral Health staff and other South Carolinian individuals who all share a common goal that oral health is important throughout a person's life. This group also supports water fluoridation because it is one of the most cost effective means for communities to improve the oral health of their residents.

Fluoride naturally exists in all water supplies. Fluoridation involves adjusting the level of naturally occurring fluoride to an optimal level for prevention of dental caries in the community water supply. Studies have shown that fluoridation can reduce tooth decay and benefit individuals of all ages.

Fluoride benefits children and adults throughout their lives. For children younger than age 8, fluoride helps strengthen the adult (permanent) teeth that are developing under the gums. For adults, drinking water with fluoride supports tooth enamel, keeping teeth strong and healthy. The health benefits of fluoride include:

- Reduction of pain, suffering and infection.
- Fewer cavities.
- Less severe cavities.
- Less need for fillings and removing teeth.

As an oral health advocate, the SCDA and others have put together this Water Fluoridation Toolkit as a resource on the health benefits, cost savings and other information on fluoridation.

We encourage you to use this toolkit as you talk with your peers, friends, legislators and opinion leaders within your community about water fluoridation.

Table of Contents

- Overview of Community Water Fluoridation
- 5 Reasons Why Fluoride in Water is Good for Communities
- The Status of Community Water Fluoridation in South Carolina
- Myths and Facts Regarding Fluoride
- Surgeon General Issues Statement on Water Fluoridation
- Return of Investment with Water Fluoridation
- Frequently Asked Questions about Fluoride and its Benefits
- American Fluoridation Society
- Supporting Local Efforts to Preserve Community Water Fluoridation
- Resources for Dental and Medical Professionals and Community-based Organizations

OVERVIEW OF COMMUNITY WATER FLUORIDATION

History of Fluoride in Water

In the 1930s, scientists examined the relationship between tooth decay in children and naturally occurring fluoride in drinking water. The study found that children who drank water with naturally high levels of fluoride had less tooth decay.¹

This discovery was important because during that time most children and adults in the United States were affected by tooth decay. Many suffered from toothaches and painful extractions — often losing permanent teeth, including molars, even as teenagers.

After extensive scientific research, in 1945, the city of Grand Rapids, Michigan, was the first to add fluoride to its city water system in order to provide residents with the benefits of fluoride. This process of testing the water supply for fluoride and adjusting it to the right amount to prevent cavities is called community water fluoridation.

Since 1945, hundreds of cities have started community water fluoridation and in 2012, nearly 75% of the United States served by community water systems had access to fluoridated water. Because of its contribution to the dramatic decline in tooth decay over the past 70 years, the Centers for Disease Control named community water fluoridation as 1 of 10 greatest public health achievements of the 20th century.

Basic Information about Fluoride

The mineral fluoride occurs naturally on earth and is released from rocks into the soil, water, and air. All water contains some fluoride. People living in areas with high levels of naturally occurring fluoride had few, if any cavities. Usually, the fluoride level in South Carolina's water is not enough to prevent tooth decay; however, some groundwater and natural springs can have naturally high levels of fluoride.

Fluoride has been proven to protect teeth from decay. Bacteria in the mouth produce acid when a person eats sugary foods. This acid eats away minerals from the tooth's surface, making the tooth weaker and increasing the chance of developing cavities. Fluoride helps to rebuild and strengthen the tooth's surface, or enamel. Water fluoridation prevents tooth decay by providing frequent and consistent contact with low levels of fluoride. By keeping the tooth strong and solid, fluoride stops cavities from forming and can even rebuild the tooth's surface.

Community water fluoridation is the process of adjusting the amount of fluoride found in water to achieve optimal prevention of tooth decay.

Although other fluoride-containing products, such as toothpaste, mouth rinses, and dietary supplements are available and contribute to the prevention and control of tooth decay, community water fluoridation has been identified as the most cost-effective method of delivering fluoride to all, reducing tooth decay by 25% in children and adults.²

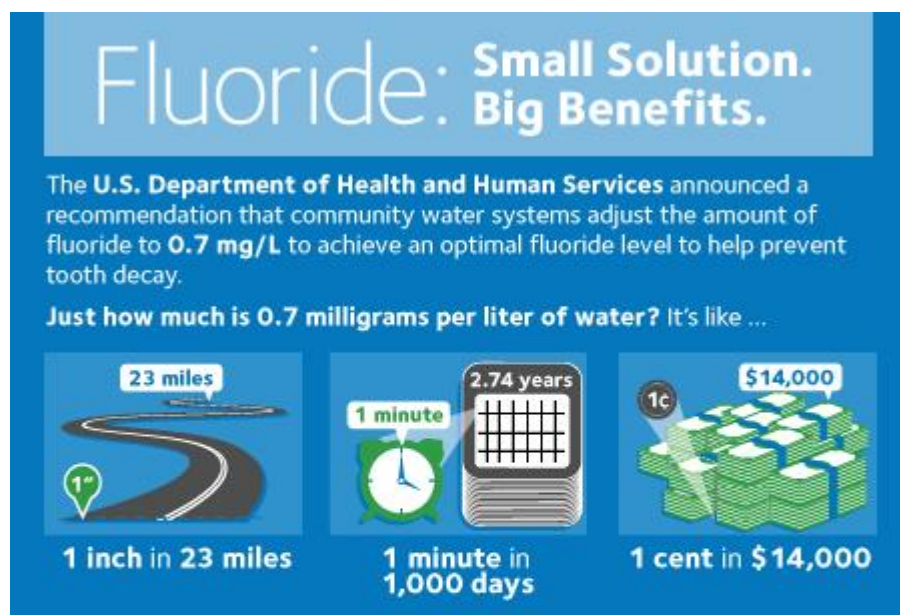
Definition of Community Water Fluoridation

Fluoridation of community water supplies is simply the adjustment of the existing, naturally occurring fluoride levels in drinking water to an optimal level for the prevention of tooth decay. Think of it this way: Water that has been fortified with fluoride is similar to fortifying milk with Vitamin D, table salt with iodine, and bread and cereals with folic acid.

The number of communities who make the choice to fluoridate their water continues to grow. From 2000-2014, more than 449 U.S. communities in 42 states have voted to adopt or retain successful fluoridation programs. The latest data show that in 2012, 74.6% of the U.S. population on public water systems, or a total of 210.7 million people, had access to optimally fluoridated water.

Fluoride Recommendations in Community Water Systems

It is recommended that community water systems adjust the amount of fluoride to 0.7 milligrams per liter (mg/L) in the public drinking water. The Environmental Protection Agency along with CDC, NIH, FDA and others are part of the recommendation. Use the chart below to see what that amount is equivalent to.



What difference does a little fluoride make? The public health benefits are big. Before water fluoridation children had about **3 times** as many cavities.

For more information, visit ADA.org/fluoride.

ADA American Dental Association®
America's leading advocate for oral health

FIVE REASONS WHY FLUORIDE IN WATER IS GOOD FOR COMMUNITIES³

1. **Prevents tooth decay.** Fluoride in water is the most efficient way to prevent one of the most common childhood diseases – tooth decay. An estimated 51 million school hours are lost each year due to dental-related illness, and one study has shown that children who live in communities without fluoridation are three times more likely to end up in the hospital to undergo dental surgery.
2. **Protects all ages against cavities.** Studies show that fluoride in community water systems prevents at least 25 percent of tooth decay in children and adults, even in an era with widespread availability of fluoride from other sources, such as fluoride toothpaste.
3. **Safe and effective.** For 70 years, the best available scientific evidence consistently indicates that community water fluoridation is safe and effective. It has been endorsed by numerous U.S. Surgeons General, and more than 100 health organizations recognize the health benefits of water fluoridation for preventing dental decay, including the Centers for Disease Control (CDC) and Prevention, the American Medical Association, the World Health Organization and the American Dental Association. The CDC has proclaimed community water fluoridation one of the 10 great public health achievements of the 20th century.
4. **Saves money.** When it comes to the cost of treating dental disease, everyone pays. Not just those who need treatment, but the entire community – through higher health insurance premiums and higher taxes. The average lifetime cost per person to fluoridate a water supply is less than the cost of one dental filling. **For most cities, every \$1 invested in water fluoridation saves \$38 in dental treatment costs.**
5. **It's natural.** Fluoride is naturally present in groundwater and the oceans. Water fluoridation is the adjustment of fluoride to an optimal level for preventing tooth decay. It's similar to fortifying other foods and beverages, like fortifying salt with iodine, milk with vitamin D, orange juice with calcium and bread with folic acid.

THE STATUS OF COMMUNITY WATER FLUORIDATION IN SC

State Fluoridation Reports

SC Population data – Almost 94% people on public water systems have access to fluoridated water. As of December 2015, 3,475,984 out of 3,714,134 people on community water systems had access to fluoridated water.

You can access the below website to learn about the fluoride level in your drinking water from CDC's My Water's Fluoride, which also includes the number of people served by the system and the water source.⁴

Steps you can take to determine the fluoride level of public water systems that serve your patients:

1. Go to: **My Water's Fluoride** Link: https://nccd.cdc.gov/DOH_MWF/Default/Default.aspx
2. To locate a Public Water System: Select South Carolina, then County
3. The County link will list all the Public Water Systems in that county and designate whether they are fluoridated (Yes or No) and the level of fluoride in the water provided by the system.
4. **Caution:** A **Yes** to fluoridated, does not mean the water system is *optimally* fluoridated (0.7 milligrams/liter (mg/L), as you can see in some data extracted from *My Water's Fluoride* to provide an example of the range of fluoride levels that can be found in SC's Public Water Systems
5. EPA Guidance if fluoride levels are higher than the recommended level for preventing decay:
 - a. **Fluoride Level is 2.0 mg/L:** (EPA) currently has a non-enforceable recommended guideline for fluoride of **2.0 mg/L** that is set to protect against dental fluorosis. For those served by such a water system, the EPA recommends that children 8 years and younger be provided with alternative sources of drinking water. If you patient's well water fluoride level is 2.0mg/L and under 4.0 mg/L, the recommendations would be the same. Accessed at: <https://www.cdc.gov/fluoridation/faqs/wellwater.htm>
 - b. **Fluoride Level is 4.0 mg/L:** It is reported that levels of 4mg/L or higher are not common. There are specific recommendations for **Private Well Water Testing** if the fluoride content is 4.0 mg/L or above at <https://www.cdc.gov/fluoridation/faqs/wellwater.htm>. For your patients with private wells, DHEC has a **Well Water Testing Program** that determines the level of fluoride in well water. Information is available at: <http://www.scdhec.gov/HomeAndEnvironment/YourHomeEnvironmentalandSafetyConcerns/DrinkingWaterConcerns/WaterTestingInstructions/>

Table: Example of Public Water System reporting in My Water's Fluoride on Fluoridation Status and Level of Fluoride

PWS Name	County	Population Served	Fluoridated	Fluoride Conc.
Abbeville, Town of	Abbeville (Primary)	5448	Yes	0.7
Calhoun Falls, Town of	Abbeville (Primary)	2300	Yes	0.7
Donalds, Due West	Abbeville (Primary)	5200	Yes	0.7
Pinehurst	Abbeville (Primary)	101	No	0.1
Colony East II	Abbeville (Primary)	24	No	0.11
CWS Purdy Shores	Abbeville (Primary)	242	No	0.42
Walterboro, City of	Colleton (Primary)	11687	Yes	0.67
Ediston Beach, Town of	Georgetown (Primary)	5292	Yes	2.8
Georgetown, City of	Georgetown (Primary)	8714	No	0.1
Andrews, Town of	Georgetown (Primary)	3534	Yes	0.96
Georgetwon rural Comm WA	Georgetown (Primary)	4767	Yes	0.78

Please confirm the data on this website with your local water system and report any discrepancies to SC DHEC Division of Oral Health at 803-898-7471.

Community Water Fluoridation

Preventing Tooth Decay for a Lifetime Two Ways



When children are young, fluoride that is swallowed enters the bloodstream and combines with calcium and phosphate as the tooth is formed under the gums.



These teeth are more resistant to decay throughout childhood and the teenage years.



For people of all ages, fluoride in beverages and foods mixes with the saliva.



Saliva neutralizes acid produced by bacteria on teeth, and the fluoride heals the teeth and protects them from further decay.



ILikeMyTeeth.org

5° HOW FLUORIDE WORKS

FLUORIDE IN DRINKING WATER



IS TAKEN IN BY
TEETH
STILL DEVELOPING
BELOW THE GUMS



TO HELP CREATE A
STRONG SURFACE

PROTECTING THE
TEETH FROM CAVITIES

IN CHILDREN AND ADULTS

TEETH ARE BATHED

IN FLUORIDE WHEN DRINKING WATER



GIVING TEETH THE
FLUORIDE THEY NEED
ALL DAY LONG

ACID PRODUCED BY BACTERIA
IN THE MOUTH CAN CREATE
HOLES ON THE SURFACE
OF THE TEETH



FLUORIDE HELPS PROTECT
& REBUILD THIS SURFACE

PREVENTING
ABOUT 25% OF CAVITIES

Build a better foundation for healthy teeth and keep your teeth stronger, longer. Fluoride in water. 70 years and going strong. At a faucet near you. Visit www.CDC.gov/Fluoridation for more information.



MYTHS AND FACTS REGARDING WATER FLUORIDATION

Myth #1: "Fluoride doesn't belong in drinking water."

The Truth: *Fluoride occurs naturally in all water, though rarely at the optimal level to protect teeth.*

The Facts:

- *Fluoride exists naturally in virtually all water supplies and even in various brands of bottled water.*
- *What's at issue is the amount of fluoride in water. There are proven benefits for public health that come from having the optimal level of fluoride in the water — just enough to protect our teeth. In April 2015, federal health officials issued a new recommended optimal level for water fluoridation: 0.7 parts per million or mg/liter.*

Myth #2: "Adding fluoride is forced medication"

The Truth: *Numerous scientific studies and reviews have recognized fluoride as a naturally occurring and important nutrient for strong healthy teeth.*

The Facts:

- *Fluoride is not a medication. It is a mineral, and when present at the right level, fluoride in drinking water has two beneficial effects: preventing tooth decay and contributing to healthy bones.*
- *U.S. court decisions have rejected the argument that fluoride is a "medication" that should not be allowed in water. The American Journal of Public Health summarized one of these rulings, noting that "fluoride is not a medication, but rather a nutrient found naturally in some areas but deficient in others."*
- *There are several examples of how everyday products are fortified to enhance the health of Americans — iodine is added to salt, folic acid is added to breads and cereals, and Vitamin D is added to milk.*

Myth #3: "Our city council can save money by ending fluoridation of our water system."

The Truth: *Fluoridation is the most cost-effective way to prevent tooth decay and promote healthy communities.*

The Facts:

- *A community that stops fluoridating, or one that has never started, will find that local residents end up spending more money on pain and suffering from infection caused by decay-related dental problems. Evidence shows that for most cities, every \$1 invested in CWF saves \$38 in unnecessary treatment costs.*
- *A Texas study confirmed that the state saved \$24 per child, per year in Medicaid expenditures because of the cavities that were prevented by drinking fluoridated water.*
- *A Colorado study showed that water fluoridation saved the state nearly \$149 million by avoiding unnecessary treatment costs. The study found that the average savings were roughly \$61 per person.*

Myth #4: "Fluoridation is a 'freedom of choice' issue. People should choose when or if they have fluoride in their water."

The Truth: *Fluoridation is a public health measure, a modest community-wide investment that benefits everyone.*

The Facts:

- *Fluoride exists naturally in virtually all water supplies, so it isn't a question of choosing, but a question of assuring that people receive the optimal amount to prevent tooth decay.*
- *Maintaining an optimal amount of fluoride in water is based on the principle that decisions about public health should be based on what is healthy for the entire community and on what is backed by the scientific evidence.*
- *Every taxpayer in a state pays the price for the dental problems that result from tooth decay. A New York study found that Medicaid enrollees in counties where fluoridation was rare needed 33.4% more fillings, root canals, and extractions than those in counties where fluoridated water was much more prevalent.*

Myth #5: "We already can get fluoride in toothpaste, so we don't need it in our drinking water."

The Truth: *Fluoridated water is the best way to protect everyone's teeth from decay.*

The Facts:

- *The benefits of CWF build on those from fluoride in toothpaste. Studies conducted in communities that fluoridated water in the years after fluoride toothpastes became common have shown a lower rate of tooth decay than communities without fluoridated water. Fluoride toothpaste alone is not enough.*
- *The U.S. Centers for Disease Control and Prevention (CDC) reviewed whether using toothpaste with fluoride alone was enough. After looking at all the ways we might get fluoride — including fluoride toothpaste — the CDC recommended that communities fluoridate water at 0.7 parts per million. Any less than that puts people at risk for the pain and suffering caused by decayed teeth.*

Myth #6: "Fluoridation causes fluorosis, and fluorosis can make teeth brown and pitted." and "Forty percent of all children now have dental fluorosis."

The Truth: *High fluoride concentrations can lead to a condition called dental fluorosis. Nearly all dental fluorosis in the U.S. is mild. This condition does not cause pain, and does not affect the health or function of the teeth.*

The Facts:

- *Nearly all cases of fluorosis are mild — faint, white specks on teeth — that are usually so subtle that only a dentist will be able to identify them. Mild fluorosis does not cause pain, and it does not affect the health or function of the teeth.*
- *The pictures of dark pitted teeth show severe cases of fluorosis, a condition that is almost unheard of in the U.S.*

- *In 2015, the U.S. Department of Health and Human Services announced a new recommended level for community water fluoridation — 0.7 parts per million (mg/liter)— that is expected to reduce the likelihood of dental fluorosis while continuing to protect teeth from decay.*

Myth #7: “Fluoride is especially unsafe for small children.”

The Truth: *Getting enough fluoride in childhood is critical to strengthening our teeth over for an entire lifetime.*

The Facts:

- *According to the American Academy of Pediatrics (AAP), optimal exposure to fluoride is important to infants and children. The use of fluoride for the prevention and control of cavities is documented by the U.S. Community Preventive Services Task Force to be both safe and effective.*
- *The American Academy of Family Physicians recommends that parents consider using dietary fluoride supplements for children at risk of tooth decay from ages 6 months through age 16 if their water isn’t fluoridated.*
- *Children who drink fluoridated water as their teeth grow will have stronger, more decay-resistant teeth over their lifetime. A 2010 study confirmed that the fluoridated water consumed as a young child makes the loss of teeth (due to decay) less likely 40 or 50 years later when that child is a middle-aged adult.*

Myth #8: “There’s a warning label on fluoride toothpaste that tells you to ‘keep out of reach of children’, so fluoride in water must also be a danger.”

The Truth: *Children who swallow toothpaste are at increased risk of mild fluorosis.*

The Facts:

- *The warning label on toothpaste reflects the fact that it contains a higher concentration (roughly 1,000 times as much fluoride) per milligram as fluoridated water. Even so, the American Dental Association (ADA) believes the warning label on toothpaste exaggerates the potential for negative health effects from swallowing toothpaste. The ADA has stated that “a child could not absorb enough fluoride from toothpaste to cause a serious problem” and noted that fluoride toothpaste has an “excellent safety record.”*

Myth #9: “Fluoridated water isn’t safe to use for babies.”

The Truth: *Fluoridated water is safe for babies and young children.*

The Facts:

- *The ADA states that “practitioners can suggest the continued use of powdered or liquid concentrate infant formulas reconstituted with optimally fluoridated drinking water.”*
- *A 2010 study examined the issue of fluorosis and infant formula, and reached the conclusion that “no general recommendations to avoid use of fluoridated water in reconstituting infant formula are warranted.” The researchers examined the condition’s impact on children and concluded that “the effect of mild fluorosis was not adverse and could even be favorable.”*

Myth #10: **"Tooth decay is no longer a problem in the United States."**

The Truth: *Although Americans' teeth are healthier than they were several decades ago, many people still suffer pain and infection from decay and the overall impact it has on their lives.*

The Facts:

- *Tooth decay is the most common chronic health problem affecting children in the U.S. It is five times more common than asthma. Tooth decay causes problems that often last long into adulthood — affecting kids' ability to sleep, speak, learn and grow into happy and healthy adults.*
- *California children missed 874,000 school days in 2007 due to toothaches or other dental problems. A study of seven Minneapolis-St. Paul hospitals showed that patients made over 10,000 trips to the emergency room because of dental health issues, costing more than \$4.7 million.*
- *Poor dental health worsens a person's future job prospects. A 2008 study showed that people who are missing front teeth are viewed as less intelligent and less desirable by employers.*
- *In a 2008 study of the armed forces, 52% of new recruits were categorized as Class 3 in "dental readiness" — meaning they had oral health problems that needed urgent attention and would delay overseas deployment.*

Myth #11: **"Fluoridation causes cancer and other serious health problems."**

The Truth: *Leading health and medical organizations agree: fluoridated water is both safe and effective.*

The Facts:

- *Leading health and medical authorities endorse water fluoridation as safe The CDC reports that "panels of experts from different health and scientific fields have provided strong evidence that water fluoridation is safe and effective."*
- *More than 3,200 studies or reports had been published on the subject of fluoridation.*
- *According to the American Council on Science and Health, "Historically, anti-fluoride activists have claimed, with no evidence, that fluoridation causes everything from cancer to mental disease."*
- *A 2011 Harvard study found no link between fluoride and bone cancer. This study design, which was approved by the National Cancer Institute, reviewed hundreds of bone samples. This is significant because the National Research Council reported that if there were any type of cancer that fluoride might possibly be linked to, it would probably be bone cancer (because fluoride is drawn to bones). The fact that this study found no link to bone cancer strengthens confidence that fluoride is unlikely to cause any form of cancer.*
- *Opponents frequently cite a 2006 study when they raise the cancer issue, but they neglect to point out that the study's author called it "an exploratory analysis." This study did not measure actual fluoride levels in bone samples but relied on estimates of fluoride exposures that could not be confirmed, undermining the reliability of the data.*

Myth #12: "Fluoridation doesn't reduce tooth decay."

The Truth: *Dozens of studies and 70 years of experience have repeatedly shown that fluoridation reduces tooth decay.*

The Facts:

- *An independent panel of 15 experts from the fields of science and public health reviewed numerous studies and concluded that fluoridation reduces tooth decay by 29%.*
- *An analysis of two similarly sized, adjacent communities in Arkansas showed that residents without access to fluoridated water had twice as many cavities as those with access to fluoridated water.*
- *In New York, Medicaid recipients in less fluoridated counties required 33% more treatments for tooth decay than those in counties where fluoridated water was prevalent.*
- *Adults benefit from fluoride, too. A 2007 review of studies found that fluoride prevents caries (tooth decay) among adults of all ages and that fluoridated water prevents decay by as much as 27%.*
- *The European Archives of Pediatric Dentistry published an analysis of 59 studies that concluded that "water fluoridation is effective at reducing [decay] in children and adults."*

Myth #13: "European countries have rejected fluoridation."

The Truth: *Millions of people living in Europe are receiving the benefits of fluoride.*

The Facts:

- *Europe has used a variety of programs to provide fluoride's benefits to the public. Water fluoridation is one of these programs. Fluoridated water reaches 12 million Europeans, mostly residents of Great Britain, Ireland and Spain. Fluoridated milk programs reach millions of additional Europeans, mostly in Eastern Europe.*
- *"Europe and Latin America have successful programs of salt fluoridation. The automatic prevention of dental caries using fluoridated salt commenced in 1955 in Switzerland. Currently, the number of users of such salt is approaching 300 million, almost 200 million in Latin America and 70-80 million in Europe."*
- *Italy has not tried to create a national system of water fluoridation, but the main reasons are cultural and geological. First, many Italians regularly drink bottled water. A number of areas in Italy have water supplies with natural fluoride levels that already reach the optimal level that prevents decay.*
- *Technical challenges are a major reason why fluoridated water is not widespread in Europe. In France and Switzerland, for example, water fluoridation is logistically difficult because of the terrain and because there are tens of thousands of separate sources for drinking water. This is why Western Europe relies more on salt fluoridation, fluoride rinse programs and other means to get fluoride to the public. Salt fluoridation reflects the position of the World Health Organization, which has recommended that "salt fluoridation should be considered where water fluoridation is not feasible for technical, financial or sociocultural reasons."*

Myth #14: "There are states with a high rate of water fluoridation that have higher decay rates than states where water fluoridation is less common."

The Truth: *Community water fluoridation is proven to reduce decay, but it isn't the only factor that affects the rate of tooth decay.*

The Facts:

- CWF plays a critical role in decay prevention, but other factors also influence decay rates. Researchers often call these "confounding factors," Someone who ignores confounding factors is violating a key scientific principle A person's income level is a confounding factor in tooth decay because low-income Americans are more at risk for decay than upper-income people. This makes sense because income status shapes how often a person visits a dentist, their diet and nutrition, and other factors.
- Comparing different states based solely on fluoridation rates ignores key income differences. For example, according to 2012 data released by the CDC,, West Virginia and Connecticut reach roughly the same percentage of their residents with fluoridated water — 91.1 percent and 93 percent, respectively. Yet the percentage of West Virginians living below the poverty line is nearly double the percentage of those living in Connecticut. West Virginians are also more likely to get their drinking water from wells, which are not fluoridated to the optimal level.
- It is misleading to compare states without considering other, confounding factors. A much more reliable approach is to compare residents of the same state who share similar traits, such as income levels. A 2010 study of New York counties did just this and found that people living in areas with fluoridated water needed fewer fillings and other corrective dental treatments.

Myth #15: "There are better ways of delivering fluoride than adding it to water."

The Truth: *Community water fluoridation is the most cost-effective way to protect oral health.*

The Facts:

- A 2003 study of fluoridation in Colorado concluded that "even in the current situation of widespread use of fluoride toothpaste," water fluoridation "remains effective and cost saving" at preventing cavities.
- Studies conducted in communities that fluoridated water in the years after fluoride toothpastes were widely used have shown a lower rate of tooth decay than communities without fluoridated water.
- Water fluoridation is inexpensive to maintain and saves money down the road. The typical cost of fluoridating a local water system is between 40 cents and \$2.70 per person, per year.

Myth #16: "The National Research Council's 2006 report said that fluoride can have harmful effects."

The Truth: *Water fluoridation has been one of the most thoroughly studied subjects, and the evidence shows it is safe and effective.*

The Facts:

- *The National Research Council (NRC) raised the possibility of health concerns about areas of the U.S. where the natural fluoride levels in well water or aquifers are unusually high. These natural fluoride levels are two to four times higher than the level used to fluoridate public water systems.*
- *The NRC itself explained that its report was not an evaluation of the safety of water fluoridation.*
- *The CDC reviewed the NRC report and stated, “The report addresses the safety of high levels of fluoride in water that occur naturally, and does not question the use of lower levels of fluoride to prevent tooth decay.”*
- *The toxicologist who chaired the NRC committee stated in 2013 that he does not see “any valid scientific reason for fearing adverse health conditions” from drinking fluoridated water.*

Myth #17: “Studies show that fluoride is linked to lower IQ scores in children.”

The Truth: *Anti-fluoride groups cite many “studies” that were poorly designed, gathered unreliable data, and were not peer-reviewed by independent scientists.*

The Facts:

- *The foreign studies that anti-fluoride activists cite involved fluoride levels that were at least double or triple the level used to fluoridate drinking water in the U.S.*
- *British researchers who evaluated these studies from China and other countries found “basic errors.” These researchers pointed out that the lower IQs could be traced to other factors, such as arsenic exposure, the burning of high-fluoride coal inside homes and the eating of contaminated grain.*
- *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.*

Myth #18: “Fluoride is a by-product from the phosphate fertilizer industry.”

The Truth: *Much of the fluoride used to fluoridate public water systems is extracted from phosphate rock.*

The Facts:

- *Much of the fluoride used to fluoridate water is extracted from phosphate rock, and so is phosphoric acid—an ingredient in Coke and Pepsi. After fluoride is extracted from phosphate rock, that rock is used to create fertilizers that will enrich soil. Opponents use this message a lot because they want to create the false impression that fluoride comes from fertilizer.*



SURGEON GENERAL ISSUES STATEMENT ON WATER FLUORIDATION

Water fluoridation has become controversial in some communities, but the US Surgeon General says the practice is one of the nation's great public health successes.

PUBLISHED: Tuesday, January 5, 2016

US Surgeon General is fighting back against criticism of community water fluoridation, calling the practice one of the most successful – and equitable – public health initiatives in the nation's history.

In a YouTube video posted late last month, Surgeon General Vivek H. Murthy, MD, MBA, said community fluoridation is responsible for a dramatic decline in the prevalence and severity of tooth decay in the United States.

He said one of the virtues of fluoridation is that its benefits cross all socioeconomic lines.

"Water fluoridation is the best method for delivering fluoride to all members of the community regardless of age, education, income level, or access to routine dental care," he said.

The statement comes as water fluoridation is under fire by some groups who argue the additive is unnecessary and potentially harmful. A recent controversial study suggested fluoride might be linked to hypothyroidism, and in April, the US Department of Health and Human Services lowered its recommendations for how much fluoride should be in drinking water. The new guidelines say the optimal fluoride level is 0.7 parts per million. The previous guideline was 0.7-1.2 ppm. The agency said the change was designed to reduce cases of fluorosis found in areas with higher levels of fluoride.

Still, the government says fluoride's benefits far outweigh its risks, a position echoed by the dental industry.

In a letter thanking Murthy for his statement, American Dental Association President Carol Gomez Summerhays, DDS, and Executive Director Kathleen T. O'Loughlin, DMD, MPH, cited studies showing fluoridation prevents 25% of tooth decay cases in children and adults.

"The preponderance of credible scientific evidence supports the continued safety and effectiveness of community water fluoridation," Summerhays and O'Loughlin wrote. "We are pleased to be working with you and others in the public health community to expand the practice."

RETURN ON INVESTMENT WITH WATER FLUORIDATION

Research shows that community water fluoridation offers perhaps the greatest return-on-investment of any public health strategy. The reduction in just the costs of filling and extracting diseased teeth and time lost from work to get care—not counting reduction in dental pain and discomfort—more than makes up for the cost of fluoridation. In recent decades, the evidence showing savings has grown:

- For most cities, every \$1 invested in water fluoridation saves \$38 in dental treatment costs.
- A Texas study confirmed that the state saved \$24 per child, per year in Medicaid expenditures for children because of the cavities that were prevented by drinking fluoridated water.
- A 2010 study in New York State found that Medicaid enrollees in less fluoridated counties needed 33 percent more fillings, root canals, and extractions than those in counties where fluoridated water was much more prevalent. As a result, the treatment costs per Medicaid recipient were \$23.65 higher for those living in less fluoridated counties.
- Researchers estimated that in 2003 Colorado saved nearly \$149 million in unnecessary treatment costs by fluoridating public water supplies—average savings of roughly \$61 per person.
- A 1999 study compared Louisiana parishes (counties) that were fluoridated with those that were not. The study found that low-income children in communities without fluoridated water were three times more likely than those in communities with fluoridated water to need dental treatment in a hospital operating room.
- By reducing the incidence of decay, fluoridation makes it less likely that toothaches or other serious dental problems will drive people to hospital emergency rooms (ERs)—where treatment costs are high. A 2010 survey of hospitals in Washington State found that dental disorders were the leading reason why uninsured patients visited ERs.
- Scientists who testified before Congress in 1995 estimated that **national savings** from water fluoridation totaled \$3.84 billion each year.

FREQUENTLY ASKED QUESTIONS:

The Pew Children's Dental Campaign supports water fluoridation because it's one of the most cost-effective strategies for states and communities to improve the oral health of their residents.

Q: What is fluoride and how does it benefit dental health?

A: Fluoride is a mineral that exists naturally in nearly all water supplies. Research proves that at a certain level in drinking water, fluoride prevents tooth decay. This optimal level is reached when a public water system adjusts—either increasing or lowering—the level of fluoride.

Q: I recently found the website of a group that opposes fluoridation. This group claims that the connection between fluoridation and cavity prevention isn't solid. Is that true?

A: No, it is not true. There is solid, consistent evidence supporting fluoride's role in cavity prevention. Studies show that fluoridation reduces tooth decay by 18 to 40 percent. Two studies released in 2010 strengthened the already substantial evidence that fluoridated water prevents cavities.

Q: Does fluoride in drinking water protect only the teeth of children or does it benefit everyone?

A: People of all ages benefit from drinking water that is optimally fluoridated. Oral health is important throughout a person's life. In the 1950s, before water fluoridation was common, most people over the age of 65 had lost their teeth. Now, after decades of widespread fluoridation, more seniors are keeping most or all of their teeth. Between 1972 and 2001, the rate of edentulism—losing all of one's teeth—dropped 26 percent among lower-income seniors and fell 70 percent among upper-income seniors.

Q: What do leading medical and health organizations say about drinking water that is optimally fluoridated?

A: The American Academy of Pediatrics, the American Dental Association, the American Medical Association and many other respected medical or health organizations recognize the health benefits of fluoridation. The U.S. Centers for Disease Control and Prevention called water fluoridation "one of 10 great public health achievements of the 20th century."

Q: Federal health officials recently recommended that public water systems reduce the level of fluoride in drinking water. Exactly what was the recommendation and why was this new level set?

A: In January 2011, the U.S. Department of Health and Human Services (HHS) recommended that the optimal level of fluoride in public water systems should be 0.7 milligrams per liter (mg/L) of water. This is a change from the previous recommendation that the optimal level would vary by a region's climate (average temperatures) within the range of 0.7 to 1.2 mg/L. This new recommendation by HHS recognizes these scientific findings: 1) Americans today are getting fluoride from more sources than they were when the original level was set, and 2) the water intake of children does not vary by climate or region. This new fluoride level demonstrates that federal health officials are periodically reviewing research and relying on the best science to update—if and when appropriate—their recommendations on fluoridated water.

Q: Are many communities planning on completely removing fluoride from water because of the recent federal announcement on the fluoride level?

A: Many communities are reviewing their fluoride levels and planning to adjust those levels to meet the new recommendation. There is no sign that many communities either want or plan to remove fluoride entirely. HHS and leading health experts do *not* support removing fluoride from water to a level below the recommended level because this would deprive people of cavity protection. In fact, the American Dental Association welcomed HHS' new fluoride level and said that water fluoridation remains "one of our most potent weapons in disease prevention."

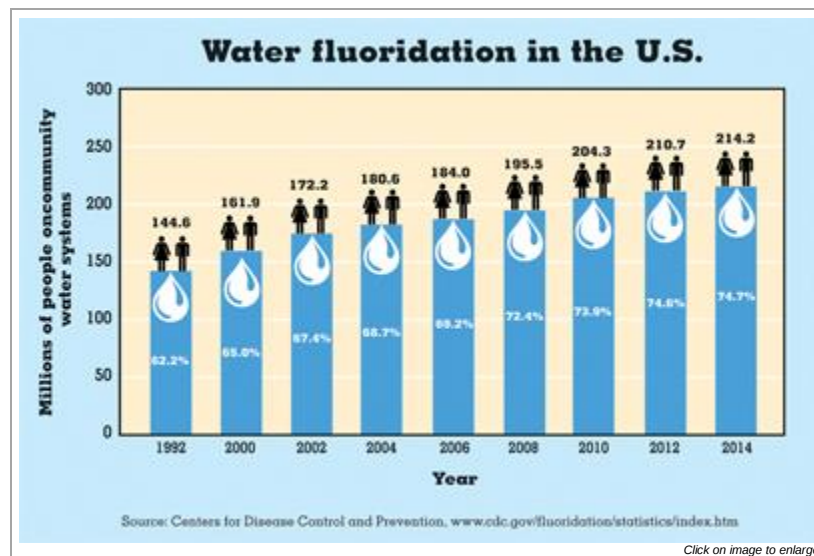
In Grand Rapids, Michigan—the first U.S. city that optimally fluoridated its water system—the city's daily newspaper wrote an editorial noting that the new HHS recommendation "should not feed the flawed notion . . . that fluoride must be removed entirely from drinking water."

Q. What impact will the new fluoride level have on Americans who are served by a public water system that's fluoridated?

A: The new optimal fluoride level that federal health officials have recommended will have a positive impact. First, it will continue to protect teeth by helping to reduce tooth decay. Second, the new level will minimize the chances of fluorosis, a condition that typically causes a minor discoloration of teeth that is usually visible only to a dentist. The new HHS recommendation reflects the fact that Americans today receive fluoride from more sources (toothpaste, mouth rinses and other products) than they were getting several decades ago.

Q: How many Americans receive water that is optimally fluoridated?

A: Roughly 72 percent of Americans whose homes are connected to a community water system receive fluoride-adjusted water. Some communities have been doing so for over 60 years.¹¹



Nearly 74.7 percent of the U.S. population on community water supplies — or about 214.2 million people — received the benefit of fluoridated water in 2014, according to statistics released March 25 by the U.S. Centers for Disease Control and Prevention.

The CDC issues updated fluoridation statistics every two years. This is the seventh consecutive increase since 2000, when 65 percent of the U.S. population on community water supplies, or about 161.9 million people, received optimally fluoridated water.

The CDC calls the jump "continued progress from the Healthy People 2020 baseline of 72.4 percent towards the target of 79.6 percent." Healthy People 2020 is a series of "science-based, 10-year national health objectives for improving the health of all Americans," according to the CDC.

"It is exciting to see the number of Americans receiving fluoridated water continues to rise," said Dr. Valerie Peckosh, chair of the ADA National Fluoridation Advisory Committee.

Among the states with the largest percentage increase in fluoridation since 2012, the last time statistics were released, are Arkansas, Colorado, New York and Wyoming, which had the highest increase in fluoridation with 13.5 percentage points, 43.6 percent to 57.1 percent.

The CDC has named water fluoridation one of 10 great public health achievements of the 20th century because of its contribution to the dramatic decline in tooth decay.

The ADA continues to endorse the use of water fluoridation for preventing tooth decay.¹²

Q: Water fluoridation helps to prevent tooth decay, but is that really a concern in the U.S. anymore?

A: Yes, it remains a concern. Although dental health has improved for many Americans, tooth decay remains the most common chronic childhood disease—five times more prevalent than asthma. Tooth decay causes problems that often last long into adulthood, affecting kids' schooling and their ability to get jobs as adults.

Q: If I use fluoridated toothpaste, am I getting enough fluoride to protect against decay?

A: No. The benefits from water fluoridation build on those from fluoride in toothpaste. Studies conducted in communities that fluoridated water in the years after fluoride toothpastes were widely used have shown a lower rate of tooth decay than communities without fluoridated water. The author of a 2010 study noted that research has confirmed “the most effective source of fluoride to be water fluoridation.” Water fluoridation provides dental benefits to people of all ages and income groups without requiring them to spend extra money or change their daily routine.

Q: Do any states have laws guaranteeing residents' access to fluoridated water?

A: Twelve states and the District of Columbia have laws designed to ensure access to fluoridated water. Forty-three of the 50 largest cities in the U.S. fluoridate their drinking water. Research shows that every \$1 invested in water fluoridation saves \$38 in unnecessary dental costs.

AMERICAN FLUORIDATION SOCIETY

The American Fluoridation Society was founded in 2014 by a group of concerned professionals anxious to see all residents of the United States served by community water systems enjoy the benefits of community water fluoridation (CWF). Equally important to this Society is to prevent rollback attempts by opponents of CWF, as well as to initiate CWF where it has not been previously available.

The aims of the American Fluoridation Society (AFS) are to:

- Promote improvement of dental health by securing the optimum fluoride content of community water systems in areas where it is sub-optimal.
- Promote and co-ordinate medical, dental, educational, and administrative efforts to achieve this remotely by means of electronic media and personal contacts.
- Distribute information about dental health and the benefits/risks of optimally fluoridated water to the fluoridation decision-makers in the communities.
- Provide direct support to communities across the United States that may need expert testimony from the American Fluoridation Society member(s) to provide the necessary information to debunk the opposition to fluoridation's pseudo-science.

In a recent news release the AFS reiterated its mission to share the facts about fluoride and counter the misinformation about fluoride. The group's leader said "AFS will be active both online and on the ground".

Although the leading health, medical and scientific organizations continue to recommend community water fluoridation as a valuable tool to reduce tooth decay rates, anti-fluoride groups are circulating misinformation online that can confuse or needlessly frighten the public.

To combat this, a group of dental and medical professionals have created the AFS seeking to debunk myths and clarify the evidence behind fluoridation's safety and benefits.

The AFS aims to build a broad coalition of health professionals, parents and other Americans who value science and want to advance health and wellness. The AFS will provide testimony and technical assistance to state and local communities that are seeking to start fluoridation or defend the practice against attacks. Last fall, roughly a half-dozen communities voted on ballot measures related to fluoridation.

Fluoridated water reaches nearly 75 percent of Americans whose homes are served by community water systems, over 210 million people. Yet this percentage is below 50 percent in eight states. In recent years, critics have used myths and conspiracy theories to try to pressure local communities into ceasing water fluoridation.

The Centers for Disease Control and Prevention (CDC) has praised fluoridation as one of the "10 great public health achievements of the 20th century." CDC reports that consuming fluoridated water reduces decay by 25% above and beyond the positive impact of fluoride in toothpaste or other products. The U.S. Community Preventive Services Task Force—an independent panel of experts—recommends fluoridation "based on strong evidence" that it reduces the incidence of tooth decay. Nonetheless, Internet-savvy critics are trying to use the web to confuse the public and distort the scientific evidence.

Dr. Johnny Johnson, a pediatric dentist who is AFS's president, says the organization will move aggressively to assist communities that want to share the facts about fluoride. "AFS will be active both online and on the ground," he declared.

Attempts by critics to link fluoride to communism in the 1950s have morphed into new types of conspiracy talk. A few years ago, the *New York Times* reported on this development: "While conspiracy theories about fluoride in public water supplies have circulated since the early days of the John Birch Society, they now thrive online, where anyone, with a little help from Google, can suddenly become a medical authority."

Dr. Johnson knows firsthand how critics of fluoridation can confuse the public and elected officials. "In Pinellas County, Florida – where I live – a handful of people worked behind the scenes to circulate a lot of inaccurate information, and health professionals were caught off guard when a vote was taken to stop fluoridation," said Dr. Johnson. "Eventually, we were able to reverse that decision, but no community should have to go through that experience." Although cavity rates have fallen significantly over the past 50 years, Dr. Johnson warned that Americans cannot take good oral health for granted.

"Before fluoride was added to the water and toothpaste, tooth decay was a sad and painful fact of life for nearly all Americans," Dr. Johnson explained. "Although we see fewer cavities today, tooth decay remains the most common chronic disease for children and adults."

It's time for people who care about health and wellness to stand firm, join together and speak out.

SUMMARY

In summary, this SCDA Fluoride Committee was established to assist dentists in their communities when faced with fluoride opposition.

The following SCDA dentists have faced an anti fluoride movement in their communities, but have worked hard and with others to counter the claims and are willing to speak with you about their efforts and how to be successful.

Dr. Rocky Napier	Aiken, SC	803-641-1000	drrocky@aol.com
Dr. Jim Mercer	Columbia, SC	803-796-5791	jmercerc@sc.rr.com
Dr. Ron Wilson	Greer, SC	864-244-7135	drwilson@greenvillesmiles.net
Dr. David Moss	Latta, SC	843-669-5687	carolinasmiles@aol.com

Some general tips to keep in mind if you hear that your community may be considering removing fluoride from the water:

- Get involved immediately
- Contact the SCDA
- Speak with one of the dentist who has been through the process
- Contact heads of local groups for support of water fluoridation
- Contact local pediatricians for support of water fluoridation
- Contact other local dentists
- Contact local water department for information
- Identify water officials who are in favor of water fluoridation
- Identify City Council officials who are in favor of water fluoridation
- Identify County Council officials who are in favor of water fluoridation
- Contact local hygiene and assisting schools for their support
- Contact local school nurses for their support.

RESOURCES

For more information on fluoridation, visit these websites:

SC Department of Health and Environmental Control Water Fluoridation
<http://www.scdhec.gov/Health/ChildTeenHealth/OralHealthforChildren/Fluoridation/>

General Information Flier
http://www.scdhec.gov/Health/docs/water_fluoridation_flyer.pdf

Dual Language Drinking Water Flier for Patients
<http://www.scdhec.gov/Library/CR-010306.pdf>

Water Fluoridation Signage for Water Fountains



American Dental Association

<http://www.ada.org/en/public-programs/advocating-for-the-public/fluoride-and-fluoridation/fluoridation-facts>

Campaign for Dental Health/American Academy of Pediatrics

<http://ilikemyteeth.org>

Centers for Disease Control and Prevention

<http://www.cdc.gov/fluoridation/>

The PEW Charitable Trust

<http://www.pewtrusts.org/en/research-and-analysis/q-and-a/2015/04/community-water-fluoridation>

Footnotes:

1 Dean HT. *On the epidemiology of fluorine and dental caries.* In: Gies WJ, ed. *Fluorine in Dental Public Health.* New York, NY: New York Institute of Clinical Oral Pathology., 1945:19–30.

2 Griffin SO, Regnier E, Griffin PM, Huntley VN. Effectiveness of fluoride in preventing caries in adults. *J Dent Res.* 2007;86(5):410–414.

3 ADA mouth healthy

4 Centers for Disease Control and Prevention

5 <http://ilikemyteeth.org/fluoridation/cost-of-fluoride/>

6 Centers for Disease Control and Prevention. "Ten Great Public Health Achievements – United States, 1990-1999." *MMWR* 1999;48(12):241-3.

7 Gift, H.C. "Oral Health Outcomes Research: Challenges and Opportunities." In Slade, G.D., ed., *Measuring Oral Health and Quality of Life.* Chapel Hill, NC: Department of Dental Ecology, University of North Carolina 1997;25-46.

8 ** Task Force on Community Preventive Services. "Promoting Oral Health: Interventions for Preventing Dental Caries, Oral and Pharyngeal Cancers, and Sports-related Craniofacial Injuries: A Report on Recommendations of the Task Force on Community Preventive Services." *MMWR* 001;50(RR21):1-13. View information at thecommunityguide.org/oral/fluoridation.html and cdc.gov/mmwr/preview/mmwrhtml/rr5021a1.htm

9 Griffin S.O., Jones, K., Tomar, S.L. "An Economic Evaluation of Community Water Fluoridation." *J Public Health Dent* 2001;61(2):78-86.

10 ADA Fluoridation Facts Compendium. Available at ADA.org/4378.aspx

10http://www.ada.org/~media/ADA/Member%20Center/Files/article_10reasons.ashx

11 PEW Research Center

12 ADA