

**CARROLL COUNTY DEPARTMENT OF PUBLIC WORKS**  
**MINUTES OF UTILITIES ADVISORY COUNCIL**  
**February 25, 2016**  
**Carroll County Government Office Building**  
**225 N. Center Street, Rm. 003**  
**Westminster Maryland 21157-5194**  
**7 pm.**

Attendees: *Council*: Michael Wilmore, Steve Miller and Ellen Dix

Absent: *Council member* Kevin Hann

*County Staff*: Jeff Castonguay, Wanda Brandenburg, Brandon Frebertshauser, Jeff Topper, Robin Hooper

*Guest speakers*: Ed Singer/Carroll County Health Officer, & Dr. David Williams/Director of Oral Health

Meeting opened by Mr. Castonguay. Introductions of all present were done.

### **Reports**

**Minutes from meeting of 11/19/15:** Minutes from November 19, 2015 were presented at the meeting. The Council, on motion of Mr. Wilmore, seconded by Mr. Miller, and carried by Mrs. Dix voted to approve the minutes of the 11/19/15 meeting.

### **Council members' status:**

- a. **Freedom Area business community:** Update 2/25/16 – Mr. Miller and Mrs. Dix both accepted reappointment as members of the committee. Both terms expire on December 31, 2018. Mr. Wilmore's final term expires December 31, 2016. He has spoken with an acquaintance who may be interested in applying for the position.
- b. **Bark Hill/Pleasant Valley:** A representative is still needed.

### **OLD BUSINESS**

- I. **Community Investment Plan (CIP) Budgets:** Updated 2/25/16 –
  - a. **Water and Sewer study** – Eight Engineering firms responded to the RFP. These will be narrowed down to three for the full scope and cost proposal. We hope to have this completed in March with the Board approval by early April.
  - b. **Freedom WWTP ENR upgrade project** – The project remains on schedule and on budget. One clarifier is completed. The ENR tank is complete and ready for water tight testing in 2 weeks. The tank was deepened for future expansion planning and cost effectiveness. The screen and grit removal system is up and running. The new generator is scheduled to be fully online in two weeks and training will take place.
  - c. **Hampstead WWTP ENR upgrade project** – MDE will hold an informational meeting on March 24 for the Discharge permit at the North Carroll Library Center. The plans are 95% completed, have been reviewed and are awaiting final comments from MDE. Plans include discharging 600,000 gallons per day or less into each stream. Temperature limits outside of our AEL are expected at these discharge amounts. Concerns by MDE in Deep Run was the reason split the flows.
  - d. **Houcksville Road/Lower Beckleysville Road Line update** – Phase I of the project, the gravity feed from the WWTP to the Cole property line is expected to be completed by mid-April/May. Phase 2, the Cole farm and Route 88 is expected to be completed by the spring of 2017.

- e. **Westminster Septage Facility upgrade project** – The 95% drawings have been reviewed and are awaiting the Technical Review Committee (TRC) and planning board approval in March/April. They are waiting on the construction permit.
  - f. **Pleasant Valley Water System project upgrade** – Project completed and closed.
  - g. **Hampstead (MD 30) Streetscape project** – Sewer line work that started in late November continues and is on time and within budget. Work is expected to be complete by June.
  - h. **Sykesville (MD 851) Streetscape Project** – Jeff C. is on the task force for the Town and provided some guidance for the project. Concept drawings were sent to State Highway Administration (SHA). Parking is to remain in place with 10 ft. travel lanes. Some areas may have parking on one side of the street only. Several monitoring wells were installed to determine where groundwater is flowing in from.
  - i. **Asset Management System project** – The project is on time and will be fully on line in August. We are looking at adding INFOSWWM to the system for real time water and sewer modelling. This will show how growth will affect the water/sewer systems, flow direction, data, etc. Every 5-7 years a check of the system will show us where we stand in capacity.
  - j. **Relief Sewer 2, 4 & 6** – The 1998 study projected the need for upgrades for increased demand. EDU's allocations have decreased due to slow home sales and capacity is not where it was projected. Relief Sewer #2 & #4 are under way for minor repairs that include sewer line repairs and lining. These lines are expected to have sufficient capacity for another 10 to 15 years. Relief #6 is pending on the results from a sewer study from CDM. Relief Sewer #10 in Sykesville is under a feasibility study for the addition of a sewer pump station. This is difficult to maintain due to the railroad station. We are looking to relocate and build a new pump station.
  - k. **Water & Sewer Specs** – More modifications are to be done. The project hasn't moved forward much due to staff time. We may need an outside firm to assist with the project
  - l. **Raincliffe Well Rehabilitation** – We are waiting on results from the green sand analysis. Green sand takes care of the manganese. If the sand needs replaced this would add an additional \$90K to the project. The carbon was determined to good. As soon as the bacteria are removed from the well, the well will need to go into production. The yield will be lower than before. RC2 well was put into play as an additional production well. The cost between both wells is between \$100K - \$120K.
- II. **Fat, Oil, Grease (F.O.G.) information:** Updated 6/15/15 – F.O.G and Wipes in the Pipes Rack cards were given to each council member. Cards have been placed at various locations throughout the water/sewer service areas and on the UAC and Utilities website. The North Carroll Senior Center requested an electronic copy to put in their newsletter. Council members gave suggestions for contacting other agencies to promote the cards for public awareness. Recognition information on the F.O.G. card for the City of Baltimore needs to be added since they permitted us to use their flyer as a template to create our cards. Wanda will meet with the County graphic designer to incorporate this into the card.
- III. **Fluoride Costs:** Updated 2/25/16 – Mr. Singer, Health Officer of the Carroll County Health Department spoke on the Fluoride topic. He stated that the addition of fluoride to water has been a big advance in health care to children. The cost of fluoride is minimal versus the cost of health care for children without access to the benefits of fluoride treated water or fluoride treatments in the school system. The Secretary of Health sent a letter to County Commissioners stating the benefit of fluoride to the system. Mr. Williams, Carroll County Oral Health Officer presented a handout with facts from fluoride studies conducted in multiple states. Facts presented to Congress in 1995 estimated a national savings from water fluoridation totaled \$3.84 billion every year. Fluoride limits added to water were decreased from the initial limit set in the 50's due to the availability of fluoride in multiple resources today. (toothpaste, mouth rinses, school programs) The Health Department is expecting to expand the

Fluoride program. Resources are limited to providing tablets to children in the elementary schools. All dentists that Mr. Singer spoke with about fluoridation recommended not removing fluoride from the water treatment process. Staff at the Freedom Water Plant was trained by the Maryland Rural Water Association team on the safe handling of fluoride during the treatment process. It is estimated that 54% of homes in Carroll County are on public water systems.

- IV. **Freedom WTP operations Membrane** Updated 2/25/16 – The Board of Commissioners approved the purchase of the new membranes. Approval from the Board saved the County \$350K dollars. The trains are being replaced with the latest version available. Well over \$500K of additional fees would be spent if we waited until the end of their life cycle.
- V. **Piney Run Reservoir** – Updated 6/18/15 –Mrs. Dix questioned why Piney Run was not considered as a main water source as opposed to a backup source. There have been many resident complaints regarding the cost of water bills. Jeff mentioned a 12 to 13% increase in raw water costs from the City of Baltimore each year now and for the foreseeable future. In 1921 the land, now Liberty Reservoir, was turned over to the City of Baltimore. Prior allocation of 3 million gallons a day for Piney Run was taken away by MDE when the project of adding a treatment plant did not get off the ground. A new process for getting the allocation back would need to take place and residents would have to change their stance on use of the reservoir to the politicians to get this back on the table, since it was the same residents years ago who prevented the project from moving forward. An initial option would be to use this as a backup source and send to Raincliffe for treatment.
- VI. **Gaither Manor** – Updated 6/18/15 - The Gaither Manor WWTP for the Schneider Apartments has aged and needs upgraded. The Schneider's do not want to operate the plant any longer. They claim that they are losing money in the apartments. The County can't get any new discharge permits but the permit for the Schneider's could be transferred if the County, if and only if we were willing to take on the system for planned expansion needs. The property is not in the priority service area at this time. We are currently looking into feasibility of operation and maintenance for the system on a more global platform to be able to service the surrounding area.
- VII. **Sprinkler System – State Requirement and existing water lateral upgrades** – Update 2/25/16 – Mr. Phil Hager has not heard about anything coming up regarding mandatory fire suppression systems for all homes. Mr. Miller stated that House Bill 775 information received from the Maryland Municipal League is not going to get approved. This would have caused hardships for many municipalities.
- VIII. **Winfield Elementary/South Carroll High Update – I&I, Discharge Location** Update 2/25/16 – There were major I&I (inflow and infiltration) issues. After scoping the line we discovered a broken sewer line and a buried clean out with no cover was found to be the cause of the problem. Nothing leaked into the stream. A lining company came in and lined about 300 ft. of pipe and HTI replaced a portion of the broken pipe. A total of \$15K was spent for all repairs.
- IX. **Fiber Network to FWTP** – The line is ready for connection. IT was not notified to start equipment specifying nor purchasing until after the line was run versus running concurrently with the line installation. The project is still 3+ months from being complete. GE will be able to see the real time monitoring system with the new security cameras.
- X. **MacBeth Walking Path/Water Line Loop** – Project is still under design. HTI can install the line with open cut versus boring under streams due to stream classification. Geotechnical (subsurface) investigation was not previously performed by Rec & Parks for the project. After some discussion with Rec & Parks about the 12 ft. high retaining wall and two bridges proposed for the project, Jeff recommended they do the investigation now versus waiting for a contractor coming on board and creating a major change order. BOU also needs information for subsurface soil classification to determine how much soil we will need to import into the project.

- XI. **Bartholow Tank Rehabilitation** – Pittsburg Paint & Tower cleaned and inspected the tank. The inside will need to be painted. CDM is working on water model with relation to putting tank back on line with a booster pump mixer.
- XII. **Raincliffe Well Rehab** - RC2 monitoring well was drilled for operational usage well and initially flowing at 75gpm. Pricing for rehab of the bypass piping is underway and evaluation of green sand and carbon filter conditions. Testing needs to be done. 80 gpm is possible with this well. RC1 will be rehabilitated if production and cost of operations is reasonable with a quick return on investment. An additional well on Macbeth Way could possibly be used for an operation well in the future that.
- XIII. **FSK Force Main** – A new air release valve was installed with quick disconnects to allow a new jet line and vacuum to clear the lines. Debris in the lines (looked like concrete) decreased flows to 18 gpm. Design was for 40 gpm. The plant is running today at 38-40 gpm.
- XIV. **Proposed CIP Project for 2017-2023** – Nothing has been approved for recommendation yet. Money is already being set aside for 10-15 year projects down the road. The Greenmount area was added and we updated the Gaither Manor to ACF list. Added HWWTP & FWWTP expansion for w/s master plan updates (all previous for 10+ years out planning) to meet the requirements by MDE for the Master Plan process only. Update Relief Sewer 10 for pump station addition to remove line between CSX and Patapsco. SCWWTP standby generators (next 15 yrs.), tank maintenance and paint project. Shilo pump station upgrade to accommodate Greenmount and IDA expansions, moving of North pump station, increase meter installs for 1 year to get ahead. Current old meters are running 10-20% low on accurate readings. We are looking to replace 2,000 meters this year for more efficiency of the system.

## **NEW BUSINESS**

- I. **FY17 Operating Budget** – Robin Hooper, Budget Analyst for Utilities presented the proposed budget to the council. There will be some cost savings due to several staff retirements this fiscal year. She indicated that 98% of the time county personnel can do a project for 60% less than the cost of hiring and outside firm or consultant. The DPW has 3 Deputy Directors that manage 10 Bureaus. Jeff C. mentioned that with the staff that the Bureau of Utilities has, they are able to perform many of the repairs without having to hire outside contractors.
- II. **City of Baltimore Water Rates** – We can expect a 12% increase in cost of water due to the rate increase from the City of Baltimore for the raw water purchase. The County water/sewer rates are still lower than many of our close municipalities. Projections 30-40 years out are being looked at now in order to avoid large rate spikes in future rates.

The next meeting is scheduled for May 26, 2016 at 7 pm in Room 003.

The meeting was adjourned.

Cc: *Council Members*  
*Jeffrey Topper, Deputy Director of Public Works*  
*Jeffrey Castonguay, Bureau Chief of Utilities*  
*Robert Burk, Comptroller*  
*Thomas S. Devilbiss, Deputy Director, Land Use, Planning & Development*  
*Robin Hooper, Budget Analyst, Department of Management & Budget*  
*Jenny Hobbs, Financial Analyst, Department of the Comptroller*  
*Ted Zaleski, Acting Chief of Staff, Board of County Commissioners*  
*Utilities Advisory Council File*  
 H:\Utilities\01 Utilities Advisory Council\Minutes\2016\UAC - REVISED DRAFT Minutes for 2-25-16 meeting.docx



## Savings from Water Fluoridation: What the Evidence Shows

Research shows that 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.<sup>1</sup>
- 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.<sup>2</sup>
- 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 optimal fluoridation was much more common.<sup>3</sup> As a result, the treatment costs per Medicaid recipient were \$23.65 higher for those living in less fluoridated counties.<sup>4</sup>
- 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.<sup>5</sup>
- By protecting the enamel of teeth, fluoridation makes it less likely that decay will develop into more serious dental problems that 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.<sup>6</sup>
- 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.<sup>7</sup>
- Scientists who testified before Congress in 1995 estimated that **national savings** from water fluoridation totaled \$3.84 billion each year.<sup>8</sup>

## Sources:

---

- <sup>1</sup> "Cost Savings of Community Water Fluoridation," U.S. Centers for Disease Control and Prevention, accessed on March 14, 2011 at [http://www.cdc.gov/fluoridation/fact\\_sheets/cost.htm](http://www.cdc.gov/fluoridation/fact_sheets/cost.htm).
- <sup>2</sup> "Water Fluoridation Costs in Texas: Texas Health Steps (EPSDT-Medicaid)," Texas Department of Oral Health Website (2000), [www.dshs.state.tx.us/dental/pdf/fluoridation.pdf](http://www.dshs.state.tx.us/dental/pdf/fluoridation.pdf), accessed on August 1, 2010.
- <sup>3</sup> Kumar J.V., Adekugbe O., Melnik T.A., "Geographic Variation in Medicaid Claims for Dental Procedures in New York State: Role of Fluoridation Under Contemporary Conditions," *Public Health Reports*, (September-October 2010) Vol. 125, No. 5, 647-54.
- <sup>4</sup> The original figure (\$23.63) was corrected in a subsequent edition of this journal and clarified to be \$23.65. See: "Letters to the Editor," *Public Health Reports* (November-December 2010), Vol. 125, 788.
- <sup>5</sup> O'Connell J.M. et al., "Costs and savings associated with community water fluoridation programs in Colorado," *Preventing Chronic Disease* (November 2005), accessed on March 12, 2011 at <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1459459/>.
- <sup>6</sup> Washington State Hospital Association, *Emergency Room Use* (October 2010) 8-12, <http://www.wsha.org/files/127/ERreport.pdf> (accessed February 8, 2011).
- <sup>7</sup> "Water Fluoridation and Costs of Medicaid Treatment for Dental Decay – Louisiana, 1995-1996," *Morbidity and Mortality Weekly Report*, (U.S. Centers for Disease Control and Prevention), September 3, 1999, accessed on March 11, 2011 at <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm4834a2.htm>.
- <sup>8</sup> Michael W. Easley, DDS, MP, "Perspectives on the Science Supporting Florida's Public Health Policy for Community Water Fluoridation," *Florida Journal of Environmental Health*, Vol. 191, Dec. 2005, accessed on March 16, 2011 at [http://www.doh.state.fl.us/family\\_dental/perspectives.pdf](http://www.doh.state.fl.us/family_dental/perspectives.pdf).



## Campaign for Dental Health

### The Clear Weight of the Evidence:

#### A Summary of Research Supporting Water Fluoridation

*Decades of research confirm the benefits of water fluoridation. Some people may question the value of fluoridating water at a time when fluoride toothpaste is widely used and children can get fluoride treatments from dentists. The following peer-reviewed studies and reports answer this question because many of them were conducted within the past 20 years—when both fluoride toothpaste and fluoride treatments were widely available. This research demonstrates the crucial, added protection against tooth decay that fluoridated water provides:*

#### It reduces the rate of tooth decay among children

- The U.S. Task Force on Community Preventive Services—a blue-ribbon panel of experts—examined 21 studies and concluded in its 2000 report that fluoridated water reduces tooth decay by a median rate of 29% among children of ages 4 to 17.<sup>1</sup>
- A study of **Alaska** children (2011), conducted by the Centers for Disease Control and Prevention, showed that children living in non-fluoridated areas had a 32% higher rate of decayed, missing or filled teeth than kids in fluoridated communities.<sup>2</sup>
- A study of **Illinois** and **Nebraska** children (1998) found that the tooth decay rate among children in the fluoridated town was 45% lower than the rate among kids in the in the two non-fluoridated towns. This benefit occurred even though the vast majority of children in each of these communities were using fluoridated toothpaste.<sup>3</sup>
- A **Nevada** study (2010) examined teenagers' oral health and found that living in a community *without* fluoridated water was one of the top three risk factors associated with high rates of decay and other dental problems.<sup>4</sup>
- A study of more than 17,000 **Australian children** (2003) found that fluoridated water's "preventive effect was maximized by continuous exposure both before and after eruption (i.e., when teeth first appear in the mouth)." This finding refutes the claim made by fluoridation opponents that topical application of fluoride is the only effective way to use fluoride.<sup>5</sup>



#### It protects adults' dental health

- Nine studies were analyzed (2007) in the *Journal of Dental Research* to estimate water fluoridation's impact on adult teeth, and this report concluded that fluoridation reduced decay by 27%. The co-authors noted the study's significance for seniors because Medicare does not cover routine dental services and this lack of coverage "increases the need for effective prevention" of decay among older adults.<sup>6</sup>



## It reduces disparities in dental health

- A 2002 study concluded that water fluoridation is “the most effective and practical method” for reducing the gap in decay rates between low-income and upper-income Americans. The study concluded, “There is no practical alternative to water fluoridation for reducing these disparities in the United States.”<sup>7</sup>
- A study in the *American Journal of Public Health* (2010) determined 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. The co-authors wrote that this study suggests that the benefits of fluoridation “may be larger than previously believed and that [fluoridation] has a lasting improvement in racial/ethnic and economic disparities in oral health.”<sup>8</sup>
- **Australia’s** National Health and Medical Research Council (2007) reviewed 77 studies and concluded that fluoridation “remains the most effective and socially equitable means of achieving community-wide exposure” to the decay-prevention effects of fluoride.<sup>9</sup>



## It saves communities money

- A **New York** study (2010) revealed that low-income children in less fluoridated counties needed more dental treatments than those living in counties where fluoridated water was common. The annual treatment costs per Medicaid recipient were \$23.65 higher for those living in less fluoridated counties.<sup>10</sup> A **Texas** study (2000) found that fluoridation saved the state Medicaid program an average of \$24 per child, per year.<sup>11</sup> Fluoridated water saved **Colorado** nearly \$149 million in 2003 by avoiding unnecessary treatment costs.<sup>12</sup>

## Sources:

<sup>1</sup> “Preventing Dental Caries: Community Water Fluoridation,” U.S. Task Force on Community Preventive Services, (2000), <http://www.thecommunityguide.org/oral/fluoridation.html>.

<sup>2</sup> “Dental Caries in Rural Alaska Native Children – Alaska, 2008,” *Morbidity and Mortality Weekly Report*, Centers for Disease Control and Prevention, (September 23, 2011) Vol. 60, No. 37, 1275-1278, [http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6037a2.htm?s\\_cid=mm6037a2\\_x](http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6037a2.htm?s_cid=mm6037a2_x).

<sup>3</sup> R.H. Selwitz et al., “Dental caries and dental fluorosis among schoolchildren who were lifelong residents of communities having either low or optimal levels of fluoride in drinking water,” *Journal of Public Health Dentistry*, (Winter 1998) Vol. 58, No. 1, 28-35, <http://www.ncbi.nlm.nih.gov/pubmed/9608443>.

<sup>4</sup> M. Ditmyer, G. Dounis, C. Mobley and E. Schwarz, “A case-control study of determinants for high and low dental caries prevalence in Nevada youth,” *BMC Oral Health*, (2010), Vol. 10, No. 24.

<sup>5</sup> K.A. Singh et al., “Relative Effects of Pre- and Posteruption Water Fluoride on Caries Experience of Permanent First Molars,” *Journal of Public Health Dentistry*, Vol. 63, No. 1, Winter 2003, <http://www.ncbi.nlm.nih.gov/pubmed/15541159>.

<sup>6</sup> S.O. Griffin, E. Regnier, P.M. Griffin and V. Huntley, “Effectiveness of Fluoride in Preventing Caries in Adults,” *The Journal of Dental Research*, (2007), Vol. 86, No. 5, 410-415, <http://www.ncbi.nlm.nih.gov/pubmed/17452559>.

<sup>7</sup> B.A. Burt, “Fluoridation and Social Equity,” *Journal of Public Health Dentistry*, (2002), Vol. 62, Issue 4, 195-255, <http://onlinelibrary.wiley.com/doi/10.1111/j.1752-7325.2002.tb03445.x/abstract>.

<sup>8</sup> M. Neidell, K. Herzog and S. Glied, “The Association Between Community Water Fluoridation and Adult Tooth Loss,” *American Journal of Public Health*, August 19, 2010, <http://www.ncbi.nlm.nih.gov/pubmed/20724674>.

<sup>9</sup> “NHMRC Public Statement: The Efficacy and Safety of Fluoridation 2007,” National Health and Medical Research Council of Australia.

<sup>10</sup> J.V. Kumar, O. Adekugbe and T.A. Melnik, “Geographic Variation in Medicaid Claims for Dental Procedures in New York State: Role of Fluoridation Under Contemporary Conditions,” *Public Health Reports*, (September-October 2010) Vol. 125, No. 5, 647-54.

<sup>11</sup> “Water Fluoridation Costs in Texas: Texas Health Steps,” Texas Department of Health, May 2000.

<sup>12</sup> J.M. O’Connell et al., “Costs and savings associated with community water fluoridation programs in Colorado,” *Preventing Chronic Disease* (November 2005), <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1459459/>.





## **Water Fluoridation**

### **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. Although a number of communities in the U.S. have been fluoridating their public water systems for more than 60 years, this strategy re-entered the spotlight in the wake of recent announcements from federal health officials about fluoride.

This FAQ is meant to answer many key questions about the benefits of fluoridation and address the federal announcements.

**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.

**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.

---

# MYTHS & FACTS

Responses to common anti-fluoride claims

For more information, go to [ILikeMyTeeth.org](http://ILikeMyTeeth.org)

THE TRUTH	OPPONENT'S CLAIM	THE FACTS
<p>Fluoride occurs naturally in water, though rarely at the optimal level to protect teeth.</p>	<p><i>"Fluoride doesn't belong in drinking water."</i></p>	<ul style="list-style-type: none"> <li>• It's already there. Fluoride exists naturally in virtually all water supplies and even in various brands of bottled water. If the people making this statement truly believed it, they would no longer drink water or grape juice — or eat shellfish, meat, cheese or other foods that contain trace levels of fluoride.</li> <li>• 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 2011, federal health officials offered a new recommended optimal level for water fluoridation: 0.7 parts per million. That's our goal: getting just enough to help all of us keep our teeth longer.</li> </ul>
<p>Numerous scientific studies and reviews have recognized fluoride as an important nutrient for strong healthy teeth.</p>	<p><i>"Adding fluoride is like forcing people to take medication"</i></p>	<ul style="list-style-type: none"> <li>• 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.</li> <li>• 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."</li> <li>• 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.</li> </ul>
<p>Fluoridation is one of the most cost-effective health strategies ever devised.</p>	<p><i>"Our city council can save money by ending fluoridation of our water system."</i></p>	<ul style="list-style-type: none"> <li>• A community that stops fluoridating or never starts this process will find that local residents end up spending more money on decay-related dental problems. Evidence shows that for most cities, every \$1 invested in fluoridation saves \$38 in unnecessary treatment costs.</li> <li>• 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.</li> <li>• 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.</li> </ul>

## THE TRUTH

## OPPONENT'S CLAIM

## THE FACTS

Fluoridated water is a public health measure where a modest community-wide investment benefits everyone.

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

Fluoride exists naturally in virtually all water supplies, so it isn't a question of choosing to get fluoride. The only question is whether people receive the optimal level that's documented to prevent tooth decay.

It is completely unrealistic to make water fluoridation a person-by-person or household-by-household choice. The cost efficiency comes from a public water system fluoridating its entire supply.

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, not based on a handful of individuals whose extreme fears are not backed by the scientific evidence.

Fluoridation is not a local issue. 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% more fillings, root canals, and extractions than those in counties where fluoridated water was much more prevalent.

Fluoridated water is the best way to protect everyone's teeth from decay.

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

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 common have shown a lower rate of tooth decay than communities without fluoridated water.

The CDC reviewed this question in January 2011. 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 the health of our teeth at risk.

Fluoride toothpaste alone is insufficient, which is why pediatricians and dentists often prescribe fluoride tablets to children living in non-fluoridated areas.

Very high fluoride concentrations can lead to a condition called fluorosis.

*"Fluoridation causes fluorosis, and fluorosis can make teeth brown and pitted."*

Nearly all fluorosis in the U.S. is mild. This condition does not cause pain, and does not affect the health or function of the teeth.

and

*"One-third of all children now have dental fluorosis."*

Nearly all cases of fluorosis are mild — faint, white specks on teeth — that are usually so subtle that only a dentist will notice this condition. Mild fluorosis does not cause pain, and it does not affect the health or function of the teeth.

The pictures of dark pitted teeth that anti-fluoride opponents circulate show severe cases of fluorosis, a condition that is almost unheard of in the U.S. Many of these photos are from India, and the reason is *natural* fluoride levels over there that are dramatically higher than the level used in the U.S. to fluoridate public water systems. Common sense shows how misleading these photos are. Think about it: Do one-third of the children's teeth you see look brown and pitted? No, they don't.

In 2011, the CDC proposed a new level for fluoridation — 0.7 parts per million — that is expected to reduce the likelihood of fluorosis while continuing to protect teeth from decay.

## THE TRUTH

## OPPONENT'S CLAIM

## THE FACTS

Getting enough fluoride in childhood will determine the strength of our teeth over our entire lifetime.

*"Fluoride is especially toxic for small children."*

- According to the American Academy of Pediatrics optimal exposure to fluoride is important to infants and children. The use of fluoride for the prevention and control of cavities is documented to be both safe and effective.
- Medical experts disagree with opponents' "toxic" claim. In fact, 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.

Children who swallow toothpaste are at increased risk of mild fluorosis.

*"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 warning label simply reflects the fact that toothpaste contains 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."
- Many vitamin labels have similar statements: "Keep out of reach of children." That's because almost anything has the potential for negative health effects if it's left in the hands of unsupervised, young children.

Fluoridated water is safe for babies and young children.

*"Fluoridated water isn't safe to use for babies."*

- The evidence does not support what anti-fluoride groups say. The American Dental Association concludes that "it is safe to use fluoridated water to mix infant formula" and encourages parents to discuss any questions they may have with their dentists and pediatricians.
- Although using fluoridated water to prepare infant formula might increase the chance that a child develops dental fluorosis, nearly all instances of fluorosis are a mild, cosmetic condition. Fluorosis nearly always appears as very faint white streaks on teeth. The effect is usually so subtle that only a dentist would notice it during an examination. Mild fluorosis does not cause pain, nor does it affect the function or health of the teeth.
- 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."

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

*"Tooth decay is no longer a problem in the United States."*

- 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.

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

*"Fluoridation causes cancer and other serious health problems."*

- The American Academy of Family Physicians, the Institute of Medicine and many other respected authorities endorse water fluoridation as safe. The Centers for Disease Control and Prevention 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. Even after all of this research, the best that anti-fluoride groups can do is to claim that fluoride *could* cause or *may* cause one harm or another. They can't go beyond speculating because the evidence simply doesn't back up their fears.
- The cancer claim is part of a pattern. 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 reviewed hundreds of bone samples, and the study's design was approved by the National Cancer Institute. The study 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 Harvard study found no link to bone cancer strengthens confidence that fluoride is unlikely to cause any form of cancer.
- Opponents usually cite a 2006 study when they raise the cancer issue, but they omit the fact that the author of this study called it "an exploratory analysis." Instead of measuring the actual fluoride level in bone, this 2006 study relied on estimates of fluoride exposures that could not be confirmed, which undermines the reliability of the data.

## THE TRUTH

## OPPONENT'S CLAIM

## THE FACTS

Dozens of studies and more than 60 years of experience have repeatedly shown that fluoridation reduces tooth decay.

*"Fluoridation doesn't reduce tooth decay."*

- 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.
- The benefits of fluoridation are long-lasting. A recent study found young children who consumed fluoridated water were still benefiting from this as adults in their 40s or 50s.
- The Centers for Disease Control and Prevention recognizes fluoridation's effectiveness in preventing tooth decay and cited fluoridated drinking water as one of the "10 great public health achievements of the 20th century."
- 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."

Millions of people living in Europe are receiving the benefits of fluoride.

*"European countries have rejected fluoridation, so why should we fluoridate water?"*

- 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.
- Salt fluoridation is the most widely used approach in Europe. In fact, at least 70 million Europeans consume fluoridated salt, and this method of fluoridation reaches most of the population in Germany and Switzerland. These two countries have among the lowest rates of tooth decay in all of 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. Second, 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 isn't 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.



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

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

- Water fluoridation plays a critical role in decay prevention, but other factors also influence decay rates. Researchers often call these factors as "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, West Virginia and Connecticut reach roughly the same percentage of their residents with fluoridated water — 91 percent and 90 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's 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.

Community water fluoridation is the most cost-effective way to protect oral health.

*"There are better ways of delivering fluoride than adding it to water."*

- 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.
- The co-author of a 2010 study stated that research confirms the "the most effective source of fluoride to be water fluoridation."
- 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 — less than the cost of medium-sized latte from Starbucks.
- For low-income individuals who are at higher risk of dental problems, fluoride rinses are a costly expense, which is why these products are not the "easy" answer that opponents of fluoridation claim they are.

## THE TRUTH

## OPPONENT'S CLAIM

## THE FACTS

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

*"The National Research Council's 2006 report said that fluoride can have harmful effects."*

- The 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 National Research Council itself explained that its report was not an evaluation of the safety of water fluoridation.
- The Centers for Disease Control and Prevention 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."

Anti-fluoride groups cite many "studies" that were poorly designed, gathered unreliable data, and were not peer-reviewed by independent scientists.

*"Studies show that fluoride is linked to lower IQ scores in children."*

- 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. It is irresponsible to claim these studies have any real meaning for our situation 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.

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

*"Fluoride is a by-product from the phosphate fertilizer industry."*

- 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, much of that rock is later used to create fertilizers that will enrich soil. Opponents use this message a lot, maybe because they want to create the false impression that fluoride comes from fertilizer.
- Corn produces several useful by-products, including corn oil, cornstarch and corn syrup. Fluoride is one example of many by-products that help to improve the quality of life or health.

### A Summary of Key Sources:

National Research Council. "Earth Materials and Health: Research Priorities for Earth Science and Public Health." National Academies Press. 2007.

Readey v. St. Louis County Water Co., supranote 25 at 628, 631 for the court's statement that it could not assume that the addition of 0.5 parts per million of fluoride to water that already contained 0.5 parts per million would result in infringement of any constitutional rights; Roemer, Ruth. "Water Fluoridation PH Responsibility and the Democratic Process." American Journal of Public Health. Vol. 55 (9), 1965. (2) Chapman v. City of Shreveport, supra note 25 at 146.

ADA Fluoridation Facts, 2005. [http://www.ada.org/sections/professionalResources/pdfs/fluoridation\\_facts.pdf](http://www.ada.org/sections/professionalResources/pdfs/fluoridation_facts.pdf).

American Dental Association Website. [www.ada.org/4052.aspx](http://www.ada.org/4052.aspx).

U.S. Centers for Disease Control and Prevention. "Water Fluoridation: Nature's Way to Prevent Tooth Decay," 2006. [www.cdc.gov/fluoridation/pdf/natures\\_way.pdf](http://www.cdc.gov/fluoridation/pdf/natures_way.pdf)

- Pew Center on the States. [http://www.pewcenteronthestates.org/initiatives\\_detail.aspx?initiativeID=42360](http://www.pewcenteronthestates.org/initiatives_detail.aspx?initiativeID=42360)
- Nadereh Pourat and Gina Nicholson, "Unaffordable Dental Care Is Linked to Frequent School Absences," Health Policy Research Brief. (UCLA Center for Health Policy Research, Los Angeles, California) November 2009.
- American Dental Association, "Statement on FDA Toothpaste Warning Labels," (July 19, 1997), <http://www.ada.org/1761.aspx>.
- Advanced Dental Hygiene Practitioners Frequently Asked Questions. NNDHA Spring 2008, p. 8. <http://www.nndha.org/DH%20FAQ.pdf>
- M. Neidell, K. Herzog and S. Glied, "The Association Between Community Water Fluoridation and Adult Tooth Loss," American Journal of Public Health, (2010).
- M. Willis, C. Esqueda, and R. Schact, "Social Perceptions of Individuals Missing Upper Front Teeth," Perceptual and Motor Skills, 106 (2008): 423–435.
- Thomas M. Leiendecker, Gary C. Martin et al., "2008 DOD Recruit Oral Health Survey: A Report on Clinical Findings and Treatment Need," Tri-Service Center for Oral Health Studies, (2008) 1 (accessed August 19, 2010).
- B. Dye, et al., "Trends in Oral Health Status: United States, 1988–1994 and 1999–2004," Vital Health and Statistics Series 11, 248 (2007), Table 5, [http://www.cdc.gov/nchs/data/series/sr\\_11/sr11\\_248.pdf](http://www.cdc.gov/nchs/data/series/sr_11/sr11_248.pdf) (accessed December 4, 2009).
- National Cancer Institute Website. Water Fluoridation Fact Sheet. <http://www.cancer.gov/cancertopics/factsheet/Risk/fluoridated-water> Accessed July 28, 2010.
- Dr. Bill Bailey. CDC Podcast 7/17/2008. <http://www2.cdc.gov/podcasts/player.asp?f=9927#transcript>
- National Health and Medical Research Council (Australia) (2007). "A systematic review of the efficacy and safety of fluoridation" (PDF). [http://www.nhmrc.gov.au/PUBLICATIONS/synopses/\\_files/eh41.pdf](http://www.nhmrc.gov.au/PUBLICATIONS/synopses/_files/eh41.pdf).
- Centers for Disease Control and Prevention. "Water Fluoridation" Homepage. [http://www.cdc.gov/fluoridation/65\\_years.htm](http://www.cdc.gov/fluoridation/65_years.htm).
- Centers for Disease Control and Prevention. "Public Health Service report on fluoride benefits and risks." Journal of the American Medical Association 1991; 266(8).
- Mouden, L. "Fluoride: The Natural State of Water." Arkansas Dentistry; Summer 2005; 77(2): 15-16.
- Kumar, J. "Geographic Variation in Medicaid Claims for Dental Procedures in New York State: Role of Fluoridation Under Contemporary Conditions". Public Health Reports. Vol. 125, 2010.
- Texas Department of Oral Health Website. [www.dshs.state.tx.us/dental/pdf/fluoridation.pdf](http://www.dshs.state.tx.us/dental/pdf/fluoridation.pdf).
- U.S. Department of Health and Human Services (USDHHS). Review of fluoride benefits and risks: report of the Ad Hoc Subcommittee on Fluoride of the Committee to Coordinate Environmental Health and Related Programs. Washington: U.S. Department of Health and Human Services, Public Health Service; 1991.
- "Ten Great Public Health Achievements – United States, 1900–1999," Centers for Disease Control and Prevention, 1999, <http://www.cdc.gov/mmwr/preview/mmwrhtml/00056796.htm>.
- Guidelines on the use of fluoride in children: An EAPD policy document. European Archives of Pediatric Dentistry, 10 (3), 2009.
- The British Fluoridation Society, The UK Public Health Association, The British Dental Association, The Faculty of Public Health of the Royal College of Physicians. "One in a million—the facts about water fluoridation." Manchester, England, 2004.
- National median fee for a two-surface amalgam (silver) filling among general dentists. (Procedure code D2150, amalgam, two surfaces, primary or permanent.) See American Dental Association, "2007 Survey of Dental Fees"; Centers for Disease Control and Prevention, Division of Oral Health, "Cost Savings of Community Water Fluoridation" (August 9, 2007), [http://www.cdc.gov/fluoridation/fact\\_sheets/cosl.htm](http://www.cdc.gov/fluoridation/fact_sheets/cosl.htm).
- CDC Fluoridation Website. <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5014a1.htm>.
- Report of the Fort Collins Fluoride Technical Study Group, (April 2003).