

## Q & A on Community Water Fluoridation

### 1. What do we know about fluoride and fluoridation?

- Fluoride exists naturally in nearly all water supplies. Water is “fluoridated” when a public water system adjusts the fluoride to a level that is optimal for preventing tooth decay.<sup>1</sup>
- About 74 percent of Americans whose homes are connected to public water systems receive fluoridated water. However, more than 72 million Americans do not have access to drinking water that is fluoridated to prevent decay.

### 2. Does fluoridated water prevent tooth decay?

- Yes. Research proves that fluoridation reduces tooth decay by about 25 percent.<sup>4</sup> As the rate of fluoridation steadily increased in the U.S., the average number of decayed, filled or missing teeth among 12-year-olds fell 68 percent between 1966 and 1994.<sup>5</sup>
- The evidence supporting fluoridated water’s effectiveness continues to build for decades—and recent studies strengthen earlier findings:
  - A New York study (2010) revealed that low-income children in less fluoridated counties needed 33 percent more fillings, root canals, and extractions than those in counties where fluoridated water was common.<sup>6</sup>
  - A study of Alaska children (2011) showed that kids living in non-fluoridated areas had a 32 percent higher rate of decayed, missing or filled teeth than kids in fluoridated communities.<sup>7</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 factors associated with high rates of decay and other dental problems.<sup>8</sup>
  - A study of Illinois communities (1995) reviewed changes in decay rates during the 1980s. This study concluded that water fluoridation was “the dominant factor” in the decline of cavities.<sup>9,2</sup>
  - Teenagers living in non-fluoridated areas of Ireland had an average rate of decay or related dental problems that was 52 percent higher than those living in fluoridated communities.<sup>10</sup>
- Research demonstrates the long-term benefits of fluoridation. 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. The coauthors 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>11</sup>

### **3. Decay is more of a problem for low-income people. Does fluoridated water help address this gap in oral health?**

- Yes, it does. Fluoridation reduces the disparities in tooth decay rates that exist by race, ethnicity and income.
- A 2002 study called water fluoridation “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>12</sup>

### **4. Does fluoridation also benefit adults or only children?**

- Tooth decay is a health problem throughout the lifespan. Nearly all (96 percent) of middle-aged adults have had tooth decay and the rate of new decay per year is at least as high for adults as it is for children.<sup>13</sup>
- Fluoridation benefits people of all ages. A 2007 report examined 20 studies to estimate fluoride’s impact on adult teeth, and the report concluded that fluoridated water reduced decay by 27 percent.<sup>14</sup>
- Seniors benefit from fluoridation, partly because it helps prevent decay on the exposed root surfaces of teeth—a condition that especially affects older adults.<sup>15</sup>

### **5. Is fluoridated water still needed?**

- Yes. Fluoridation remains critically important. Tooth decay is widespread, affecting more than 90 percent of Americans by the time they reach their adult years.<sup>16</sup>
- At a time when more than 100 million Americans lack dental insurance, fluoridation offers an easy, inexpensive preventive strategy that everyone benefits from simply by turning on their tap.<sup>3</sup>
- Although Americans’ dental health has improved considerably in recent decades, tooth decay and other oral health issues remain a challenge. A 2010 study revealed that nearly one out of seven children aged 6 to 12 years had suffered a toothache over the previous six months.<sup>17</sup>
- Even the U.S. armed forces recognize the need for fluoridated water. A senior official with the Department of Defense called tooth decay “a major problem for military personnel” and notes that fluoridation will “directly reduce their risk for dental decay and improve [military] readiness.” Most military bases have provided fluoridated water for decades.<sup>18</sup>
- Fluoridated water is also the most inexpensive way to provide fluoride. The per-person annual cost of fluoride rinse programs is roughly double the cost of

fluoridated water. The per-person annual cost of fluoride supplements is more than 70 times higher than fluoridated water. Fluoride varnishes or gels also cost more than providing fluoridated water.<sup>19</sup>

## **6. Isn't using fluoride toothpaste enough?**

- No. Many years after fluoride toothpaste became widely used, an independent panel of experts examined the specific impact of water fluoridation and determined that fluoridation reduces tooth decay by about 29 percent.<sup>20</sup> Even today, fluoridated water plays a critical role of maximizing protection against decay.
- The co-author of a 2010 study noted that research has confirmed “the most effective source of fluoride to be water fluoridation.”<sup>21</sup>

## **7. Exactly how does fluoride work to prevent tooth decay?**

- The fluoride in drinking water works in two ways. For people of all ages, it works topically on tooth surfaces. Fluoride mixes with saliva, and when the saliva neutralizes acids produced by bacteria on teeth, the fluoride joins the enamel crystals on the tooth surfaces, healing and protecting the teeth from further decay.<sup>22</sup>
- Fluoridated water works systemically when it's swallowed by young children while teeth are forming. Fluoride combines with the calcium and phosphate of the developing teeth and makes them more resistant to decay, especially during the first few years after they come into the mouth.<sup>23</sup> Research has confirmed that systemic use of fluoride increases the concentration of fluoride in the surface enamel of teeth.<sup>24</sup>

## **8. If fluoridation is effective, why are people still getting cavities?**

- Fluoride in various forms has reduced tooth decay, but fluoride alone cannot guarantee someone a life without any cavities. Diet and nutrition play a role, and so do other 4 factors — like the frequency with which people get routine dental care. But we know from decades of research that fluoridation does reduce the rate of decay.
- More than 100 million Americans have a drinking water supply that is not fluoridated to the optimal level that helps prevent decay.<sup>25</sup> Getting fluoridated water to more U.S. residents would help reduce the incidence of decay.

## **9. Is it right to add something to water without getting individuals' consent?**

- It would be virtually impossible for any individual to consume food or water that wasn't fortified with at least some added ingredients to benefit human health.
  - Iodine is added to salt to prevent goiter, which affects the thyroid gland.
  - Chlorine is added to prevent outbreaks of E. coli or other forms of bacteria in drinking water.
  - Folic acid is added to many breads and cereals to produce healthy red blood cells.
- Our society respects individual rights, but every right has its boundaries. In America, there are certain policies we adopt communitywide or nationwide because they are cost-effective ways to strengthen health and security. Courts have consistently held that it is legal and appropriate for a community to adopt a fluoridation program.<sup>26</sup>

## **10. Is ending fluoridation a way to save tax dollars?**

- No. In fact, ending fluoridation imposes a hidden "tax" on families and taxpayers because it is likely to increase their dental expenses to treat decayed teeth. The evidence proves that 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.<sup>27</sup>
- For most cities, every \$1 invested in water fluoridation saves \$38 in dental treatment costs.<sup>28</sup> A 2003 study in Fort Collins, Colorado, estimated that if the city discontinued fluoridation, it would cost its residents more than \$534,000 per year.<sup>29</sup> In 2003, water fluoridation saved Colorado nearly \$149 million by avoiding unnecessary treatment costs. The study found that the average savings in these fluoridated communities were roughly \$61 per person.<sup>30</sup>
- Scientists who testified before Congress in 1995 estimated that national savings from water fluoridation totaled more than \$3.8 billion each year.<sup>31</sup>
- Taxpayers save money because fluoridation reduces Medicaid expenses on dental treatments. Studies in Texas and New York have shown that states save approximately \$24 per person, per year in Medicaid expenditures because of the cavities that were prevented by drinking fluoridated water.<sup>32</sup>

## **11. Has the momentum shifted against water fluoridation?**

- No. Although it's true that some communities have chosen to stop fluoridating over the past year, the overall trend shows a continued increase in the number of Americans who receive fluoridated water. Between 2000 and 2008, an additional 34 million Americans gained access to fluoridated drinking water.<sup>33</sup>

- Since 1992, the percentage of people on public water systems who receive fluoridated drinking water has risen from 62 percent to 72 percent. The rate of this increase has picked up in the past eight years.<sup>34</sup>
- Since January 2011, Arkansas has enacted a state law guaranteeing access to fluoridated water for an additional 640,000 residents, and a water board in San Jose, Calif., has voted to fluoridate its water. The California vote means that more than 280,000 additional people will eventually gain access to fluoridated water.

## **12. Is fluoridated drinking water safe?**

- Yes. Over the past several decades, hundreds of studies have confirmed the safety of fluoride. According to the Centers for Disease Control and Prevention, “panels of experts from different health and scientific fields have provided strong evidence that water fluoridation is safe and effective.” This issue has been studied thoroughly, and there is no credible evidence to support the claims that anti-fluoride activists make.<sup>35</sup>
- The new recommended level for fluoridating water (0.7 milligrams per liter) should strengthen the public’s confidence that health officials are periodically reviewing standards and—when appropriate—updating them.<sup>36</sup> The American Dental Association welcomed the new fluoride recommendation, noting that fluoridation remains “one of our most potent weapons in disease prevention.”<sup>37</sup>
- The American Academy of Family Physicians, the World Health Organization, the Institute of Medicine and many other respected health and medical authorities have endorsed water fluoridation as a safe and effective practice.<sup>38</sup>
- What is true for calcium and potassium is also true for fluoride—even a beneficial mineral, if consumed at extraordinarily high levels, can potentially be detrimental to one’s health. The good news is that federal health standards guide local water companies, enabling them to fluoridate water at levels that are safe and effective.

## **13. Should we do more studies on fluoridation before continuing this practice?**

- More than 3,000 studies or research papers have been published on the subject of fluoridation.<sup>39</sup> Few topics have been as thoroughly researched as fluoridation. The overwhelming weight of the evidence—plus more than 65 years of experience—supports the safety and effectiveness of this public health practice.
- It’s doubtful that even a hundred new studies would convince the anti-fluoride activists to reconsider the misleading attacks they make against fluoridation.
- Although additional studies are always welcomed, the existing research—including several studies in the past decade—provides solid support for

fluoridation. As the Centers for Disease Control and Prevention has written, “For many years, panels of experts from different health and scientific fields have provided strong evidence that water fluoridation is safe and effective.”<sup>40</sup>

**14. I read something on the Internet about a condition called “fluorosis.” Is that a reason not to fluoridate drinking water?**

- No. Nearly all fluorosis in the U.S. is a mild, cosmetic condition that leaves faint white streaks on teeth. It doesn’t cause pain, and it doesn’t affect the health or function of the teeth. In fact, it’s so subtle that it usually takes a dentist to even notice it.
- Experts believe that in many cases fluorosis occurs because young children consume toothpaste while brushing their teeth. This is why dentists and health officials recommend that parents supervise young children while they are brushing their teeth.
- A study published in 2010 found that mild fluorosis was not an adverse health condition and that it might even have “favorable” effects on overall health. That’s why the study’s authors said there was no reason why parents should be advised not to use fluoridated water in infant formula.

**15. I heard that the federal government reduced the level of fluoride recommended for drinking water in 2011. What was the reason for that change?**

- 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 of water. HHS’ new level reflects the fact that Americans today get fluoride from more sources—such as toothpaste and mouth rinses—than they received when the original level was set.<sup>41</sup>
- The HHS recommendation will continue to protect Americans’ dental health while minimizing the chance of fluorosis—a typically mild, cosmetic condition that causes faint white streaks on teeth. The effect of mild fluorosis is so subtle that only a dentist would<sup>7</sup> notice it while doing an examination. This condition does not cause pain and does not affect the function or health of the teeth.<sup>42</sup>

**16. Should the public vote on whether to fluoridate local water systems?**

- The health and well-being of Americans is a national concern. However, state laws and city ordinances determine the process for how a community decides whether to fluoridate. The key is to ensure that those making this decision are relying on sound, scientifically accurate information.<sup>43</sup>

- Elected officials make a wide range of decisions about health issues. We feel comfortable having them set policies on water fluoridation, and we want to ensure they understand fully what the science shows before setting those policies.

## 17. How do we know the fluoride additives used to fluoridate drinking water are safe?

- The quality and safety of fluoride additives are ensured by Standard 60, a program that was commissioned by the Environmental Protection Agency (EPA). Standard 60 is a set of standards created and monitored by an independent committee of experts, involving the Association of State Health Officials and other key organizations. This committee provides regular reports to the EPA.<sup>44</sup>
- More than 80 percent of fluoride additives are produced by U.S. companies, but nomatter where they come from, Standard 60 uses on-site inspections and even surprise“spot checks” to confirm these additives meet quality and safety standards.<sup>45</sup>

## Sources

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<sup>1</sup>“Fluoridation Basics,” Centers for Disease Control and Prevention, <http://www.cdc.gov/fluoridation/benefits/background.htm>

<sup>2</sup>“2008 Water Fluoridation Statistics,” Centers for Disease Control and Prevention, <http://www.cdc.gov/fluoridation/statistics/2008stats.htm>.

<sup>3</sup>This 75 million figure does not include Americans who are not on public water systems and who receive their water from wells or other means.

<sup>4</sup>A national task force of experts found that decay was reduced by a median rate of 29 percent. The children who experienced this reduction in the median decay rate were aged 4 to 17. See: “Summary of Task Force Recommendations and Findings,” The U.S. Task Force on Community Preventive Services, (2002), <http://www.thecommunityguide.org/oral/fluoridation.html>, accessed November 22, 2011.

<sup>5</sup>“Achievements in Public Health, 1900-1999: Fluoridation of Drinking Water to Prevent Dental Caries,” Centers for Disease Control and Prevention, Morbidity and Mortality Weekly Report, (October 22, 1999), Vol. 48, No. 41, 936, <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm4841a1.htm>.

<sup>6</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>7</sup>This data covered the 9- to 11-year-old age group of children. See: "Dental Caries in Rural Alaska Native Children – Alaska, 2008," *Morbidity and Mortality Weekly Report*, Centers for Disease Control and Prevention, 8 (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>8</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, <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2989299/>.

<sup>9</sup>R.H. Selwitz et al., "Prevalence of Dental Caries and Dental Fluorosis in Areas with Optimal and Above-optimal Water Fluoride Concentrations: a 10-Year Follow-up Survey," *Journal of Public Health Dentistry*, (Spring 1995), Vol. 55, No.2, 90.

<sup>10</sup>The data relied on data for decayed, missing and filled teeth (DMFT) in 15-year-olds. The average number of DMFT in fluoridated areas of the Republic of Ireland was 2.1 versus 3.2 in non-fluoridated communities. See: M.A. Lennon et al., "Fluoride: Rolling Revision of the WHO Guidelines for Drinking-Water Quality," draft report, World Health Organization, (September 2004),  
[http://www.who.int/water\\_sanitation\\_health/dwq/nutfluoride.pdf](http://www.who.int/water_sanitation_health/dwq/nutfluoride.pdf).

<sup>11</sup>M. Neidell, K. Herzog and S. Glied, "The Association Between Community Water Fluoridation and Adult Tooth Loss," *American Journal of Public Health*, (October 21, 2010), <http://www.cfh.org/hbns/archives/viewSupportDoc.cfm?supportingDocID=942>, accessed December 1, 2011.

<sup>12</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/jphd.2002.62.issue-4/issuetoc>.

<sup>13</sup>S.O. Griffin, P.M. Griffin, J.L. Swann, N. Zlobin, "New coronal caries in older adults: implications for prevention," *Journal of Dental Research*, (2005), Vol. 84, No. 8, 715-720.

<sup>14</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>15</sup>"Achievements in Public Health, 1900-1999: Fluoridation of Drinking Water to Prevent Dental Caries," *Morbidity and Mortality Weekly Report*, Centers for Disease Control and Prevention, (October 22, 1999), Vol. 48, No. 41, 933-940,  
<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm4841a1.htm>.

<sup>16</sup>See Table 40 of "Trends in Oral Health Status: United States, 1988–1994 and 1999–2004," Centers for Disease Control and Prevention, Series 11, No. 248,  
[http://www.cdc.gov/nchs/data/series/sr\\_11/sr11\\_248.pdf](http://www.cdc.gov/nchs/data/series/sr_11/sr11_248.pdf).



<sup>17</sup>Nancy Fowler Larson, "Minority, Poor, and Special-Needs Children More Prone to Toothache," Medscape Medical News, (November 1, 2010), <http://www.medscape.com/viewarticle/731715>, accessed October 25, 2011.

<sup>18</sup>Memorandum by Jonathan Woodson, Assistant Secretary of Defense for Health Affairs, to U.S. Department of Defense facilities, (July 18, 2011).

<sup>19</sup>"Recommendations for Using Fluoride to Prevent and Control Dental Caries in the United States," Morbidity and Mortality Weekly Report, Centers for Disease Control and Prevention, (August 17, 2001), Vol. 50 1-42, <http://cdc.gov/mmwr/preview/mmwrhtml/rr5014a1.htm>.

<sup>20</sup>"Preventing Dental Caries: Community Water Fluoridation," The U.S. Task Force on Community Preventive Services, <http://www.thecommunityguide.org/oral/fluoridation.html>.

<sup>21</sup>"Drinking Tap Water May Help You Avoid Dentist's Drill, Study Says," ScienceDaily (April 13, 2010), <http://www.sciencedaily.com/releases/2010/04/100413121328.htm>.

<sup>22</sup>JDB Featherstone, "Prevention and reversal of dental caries: role of low level fluoride," Community Dentistry and Oral Epidemiology, (1999), Vol. 17, 31-40.

<sup>23</sup>K.A. Singh, A.J. Spencer and J.M. Armfield, "Relative effects of pre- and posteruption water fluoride on caries experience of permanent first molars," Journal of Public Health Dentistry, (2003), Vol. 63(1), 11-19.

<sup>24</sup>E. Hellwig and A.M. Lennon, "Systemic versus Topical Fluoride," Caries Research (2004), Vol. 38, 258–262 (Note: The article explained that laboratory analyses confirmed that "fluoride concentration in surface enamel was higher in teeth that developed under the influence of water fluoridation.")

<sup>25</sup>"2008 Water Fluoridation Statistics," Centers for Disease Control and Prevention, <http://www.cdc.gov/fluoridation/statistics/2008stats.htm>, accessed February 3, 2012.

<sup>26</sup>B. Burt and S. Eklund, Dentistry, Dental Practice, and the Community, 6th Edition, (2005), (Elsevier Saunders: St. Louis), p. 341.

<sup>27</sup>Research reveals that the median cost per person/per year for 75 public water systems to provide fluoridated water was as follows: \$2.70 among water systems serving fewer than 5,000 people and only 40 cents for systems serving more than 20,000 people. See: "Preventing Dental Caries: Community Water Fluoridation," The Community Guide Branch, Centers for Disease Control and Prevention, (2002), <http://www.thecommunityguide.org/oral/fluoridation.html>, accessed October 27, 2011.

<sup>28</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).9

<sup>29</sup>This figure was calculated by multiplying the number of residents in Fort Collins (a 2003 population of 125,740) by \$4.25, the estimated cost that would result per capita, per year if the city stopped fluoridating its local water system. See: "Finding #3," Report of the Fort Collins Fluoride Technical Study Group, Larimer County Board of Health, (April 2003), 52, <http://www.healthdistrict.org/fluoridereport/FTSG.htm>.

<sup>30</sup>J.M. O'Connell 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>31</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>.

<sup>32</sup>The Texas study revealed cost savings of \$24 per child, per year. The New York study found that the dental treatment costs per Medicaid recipient were \$23.65 higher for those living in less fluoridated counties. 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). "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); 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>33</sup>This is based on data from the Centers for Disease Control and Prevention, and 2008 is the last year for which data are available. See: <http://www.cdc.gov/fluoridation/statistics/2008stats.htm>.

<sup>34</sup>Data for years 1992 and 2000 are from Reference Statistics on Water Fluoridation Status, Centers for Disease Control and Prevention. See: [http://www.cdc.gov/fluoridation/statistics/reference\\_stats.htm](http://www.cdc.gov/fluoridation/statistics/reference_stats.htm)

<sup>35</sup>"Community Water Fluoridation: Safety," Centers for Disease Control and Prevention, <http://www.cdc.gov/fluoridation/safety.htm>.

<sup>36</sup>Dr. Howard K. Koh and Nancy Stoner, "Protecting Our Drinking Water and Health," [WhiteHouse.gov](http://WhiteHouse.gov), November 2011), [https://www.whitehouse.gov/petitions#!/petition/prohibit-all-federal-agencies-promoting-endorsing-orfunding-fluoridation-public-drinkingwater/SRYL4NwC?utm\\_source=wethepeople&utm\\_medium=response&utm\\_campaign=fluoride](https://www.whitehouse.gov/petitions#!/petition/prohibit-all-federal-agencies-promoting-endorsing-orfunding-fluoridation-public-drinkingwater/SRYL4NwC?utm_source=wethepeople&utm_medium=response&utm_campaign=fluoride). (Note: This joint statement was an official response by the U.S. Department of Health and Human Services and the Environmental Protection Agency to a petition submitted to the White House on September 23, 2011.)

<sup>37</sup>"ADA commends new fluoride recommendations," American Dental Association, (January 2011), <http://www.ada.org/news/5196.aspx>.

<sup>38</sup>“Fluoridation of Public Water Supplies,” a policy statement of the American Academy of Family Physicians, accessed on January 24, 2011 at:  
<http://www.aafp.org/online/en/home/clinical/clinicalrecs/guidelines/fluoridation.html>;  
Improving Access to Oral Health Care for Vulnerable and Underserved Populations,  
Institute of Medicine (July 2011) 2-17,

[http://books.nap.edu/openbook.php?record\\_id=13116](http://books.nap.edu/openbook.php?record_id=13116).

<sup>39</sup>K.K. Cheng, I. Chalmers and T.A. Sheldon, “Adding fluoride to water supplies,” *British Medical Journal*, (October 6, 2007), Vol. 335, 699.

<sup>40</sup>“Community Water Fluoridation: Safety,” Centers for Disease Control and Prevention, <http://www.cdc.gov/fluoridation/safety.htm>; H.F. Pollick, “Water fluoridation and the environment: current perspective in the United States,” *International Journal of Environmental and Occupational Health*, July-September 2004, Vol. 10, No. 3, 343-350, <http://www.ncbi.nlm.nih.gov/pubmed/15473093>.

<sup>41</sup>“HHS and EPA announce new scientific assessments and actions on fluoride,” a press release by the U.S. Department of Health and Human Services, January 7, 2011, accessed on January 20, 2011  
at:<http://www.hhs.gov/news/press/2011pres/01/20110107a.html>.

<sup>42</sup>“Oral Health Topics: Fluorosis,” American Dental Association; O. Chankanka, S. Levy et al. “A Literature Review of Aesthetic Perceptions of Dental Fluorosis and Relationships With Psychosocial Aspects/Oral HealthRelated Quality of Life,” *Community Dental and Oral Epidemiology* (2010), Vol. 38, 97-109, accessed on May 3 at <http://www.ncbi.nlm.nih.gov/pubmed/20002631>. (Note: The co-authors noted that dental fluorosis “is not a condition that causes pain or has clinical symptoms.”)

<sup>43</sup>Anti-fluoride activists may say they want a public vote, but there are various examples that show they are willing to ignore what the public says when they don’t like the outcome. For example, in a 2006 election in Burlington, Vermont, 71 percent voted to support fluoridation of the city’s water system. Even after that resounding show of 10support, opponents continued attacking fluoridation in the years that followed. See: John Briggs, “City panel recommends halting fluoride,” *The Burlington Free Press*, December 17, 2010.

<sup>44</sup>E-mail communication from Kip Duchon, U.S. Centers for Disease Control and Prevention, to the Pew Center on the States, March 26, 2012. (Note: Duchon is the CDC’s National Fluoridation Engineer.)

<sup>45</sup>E-mail communication from Kip Duchon, U.S. Centers for Disease Control and Prevention, to the Pew Center on the States, March 26, 2012. (Note: Duchon is the CDC’s National Fluoridation Engineer.)