

## Fluoride 101

### Fluoride is a naturally occurring mineral in water

- Fluoride occurs 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, either by lowering the amount of fluoride in the water or increasing it.<sup>i</sup>
- Roughly 74% of Americans connected to public water systems receive fluoridated water. However, more than 100 million Americans do not have access to drinking water that is fluoridated.

### Fluoride is highly effective at preventing tooth decay

- Research proves that fluoridation reduces tooth decay by about 25 percent.<sup>i</sup>
- As the rate of fluoridation steadily increased in the U.S., between 1966 and 1994 the average number of decayed, filled, or missing teeth among 12-year-olds fell sixty-eight percent.<sup>ii</sup>
- Research demonstrates the long-term benefits of fluoridation. A 2010 study confirmed that consuming fluoridated water 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.<sup>iii</sup>
- The Centers for Disease Control and Prevention has praised water fluoridation as one of *“ten great public health achievements of the 20th century.”*<sup>iv</sup>

### Fluoride is beneficial to all people regardless of age or socio-economic status

- 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>v</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>vi</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>vii</sup>

### Fluoride is cost-effective and saves money

- Fluoridated water is the most inexpensive way to provide fluoride. 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>viii</sup>

- Ending fluoridation is likely to increase family dental expenses to treat decayed teeth. The evidence shows 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.<sup>ix</sup>
- For most cities, every \$1 invested in water fluoridation saves \$38 in dental treatment costs.<sup>x</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>xi,xii</sup>

### **Fluoride is extremely safe**

- 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.<sup>xiii</sup>
- The leading health and medical organizations support water fluoridation. This list includes the American Academy of Pediatrics, the American Dental Association, the Institute of Medicine, the Centers for Disease Control and Prevention, and the American Academy of Family Physicians.
- More than 3,000 studies and research papers have been produced about fluoridation and fluoride. After all of these studies, if there were any evidence of supposed harms, we would know about it by now. Two facts are clear: Americans have been drinking fluoridated water for over 70 years, and there is overwhelming evidence showing it is both safe and effective.
- There is no evidence proving that fluoride is harmful at the level used for fluoridating water.

## References

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- <sup>i</sup> “Fluoridation Basics,” Centers for Disease Control and Prevention, <http://www.cdc.gov/fluoridation/benefits/background.htm>
- <sup>ii</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>iii</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>iv</sup> <http://www.cdc.gov/mmwr/preview/mmwrhtml/00056796.htm>
- <sup>v</sup> *Ibid*
- <sup>vi</sup> “2008 Water Fluoridation Statistics,” Centers for Disease Control and Prevention, <http://www.cdc.gov/fluoridation/statistics/2008stats.htm>.
- <sup>vii</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>viii</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>ix</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>x</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/factsheets/cost.htm>.
- <sup>xi</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/flstudy.pdf](http://www.dshs.state.tx.us/dental/pdf/flstudy.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.