



## Virginia Chapter

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July 7, 2015

City of Martinsville  
55 W. Church Street  
Martinsville, VA 24112

Dear Board of Directors,

As President of the Virginia Chapter of the American Academy of Pediatrics (VA-AAP), I am writing in support of community water fluoridation. Community water fluoridation is the most efficient way to prevent tooth decay, the most common chronic disease of childhood. Decay of primary (baby) teeth can affect growth, lead to malocclusion, cause significant pain and result in potentially life-threatening infections. In fact, an estimated 51 million school hours are lost per year, in this country because of dental related illness. Community water fluoridation reduces dental caries (tooth decay) and therefore prevents disease associated with dental infection. It improves the quality of life and saves money in dental treatment costs.

An AAP Policy Statement released in 2008 states that "Water fluoridation is a community-based intervention that optimizes the level of fluoride in drinking water, resulting in pre-eruptive and post-eruptive protection of the teeth. In short, fluoridated water is the cheapest and most effective way to deliver anticaries benefits to communities.

As a practicing pediatrician for 30 years, I know that tooth decay continues as a significant health concern for children. On behalf of the VA-AAP, I urge you to continue community water fluoridation in Nelson County.

Sincerely,

A handwritten signature in cursive script, appearing to read "Barbara L. Kahler".

Barbara L. Kahler, MD, FAAP  
President, Virginia Chapter

**AAP Headquarters**  
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# American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN™



July 9, 2015

Leon Towarnicki, City Manager  
Martinsville City Hall  
P.O. Box 1112  
Martinsville, VA 24114

Dear Mr. Towarnicki,

The American Academy of Pediatrics (AAP) is a professional organization of 60,000 primary care pediatricians, pediatric medical sub-specialists, and pediatric surgical sub-specialists dedicated to the health, safety, and well-being of infants, children, adolescents, and young adults. The AAP echoes the recommendations of the Centers for Disease Control and Prevention (CDC) and the American Dental Association (ADA) in stating that community water fluoridation is safe, effective, and protective of unnecessary dental disease, a costly and painful condition.

The AAP is particularly concerned with the high rates of early childhood caries (tooth decay) in the United States and the detrimental effects this disease can have on children. Dental caries, although largely preventable, is the most common chronic childhood disease, 5 times more common than asthma. Dental caries can lead to severe health problems, including serious infection, debilitating pain, dietary and speech problems, and in rare cases, even death. Therefore, the AAP supports community water fluoridation as a way to help protect children's teeth. Several AAP policies and guidelines speak to the benefit of community water fluoridation. For example:

- Regular and frequent exposure to small amounts of fluoride is the best way to protect the teeth against caries. This exposure can be readily accomplished through drinking water that has been optimally fluoridated and brushing with fluoride toothpaste twice daily.<sup>1</sup>
- The delivery of fluoride includes community-based, professionally applied, and self-administered modalities. Water fluoridation is a community-based intervention that optimizes the level of fluoride in drinking water, resulting in pre-eruptive and post-eruptive protection of the teeth. Water fluoridation is a cost-effective means of preventing dental caries, with the lifetime cost per person equaling less than the cost of 1 dental restoration. In short, fluoridated water is the cheapest and most effective way to deliver anticaries benefits to communities.<sup>2</sup>
- Water fluoridation is seen as effective and inexpensive, does not require daily adherence, and promotes equity, because it benefits everyone regardless of socioeconomic status.<sup>3</sup>

The AAP continues its mission to ensure the health and well-being of all children, and, to this end, supports local and state efforts to ensure children have access to safe, optimally fluoridated water. Thank you for the opportunity to provide this statement. If you require more information, please email the AAP at [oralhealth@aap.org](mailto:oralhealth@aap.org).

Sincerely,

A handwritten signature in black ink that reads "Sandra G. Hassink, MD, FAAP".

Sandra G. Hassink, MD, FAAP  
President

SGH/lb

<sup>1</sup> Bright Futures Guidelines for the Health Supervision of Infants, Children, and Adolescents, 3<sup>rd</sup> Edition. 2008.

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AMERICAN PUBLIC HEALTH ASSOCIATION

*For science. For action. For health.*

July 9, 2015

Martinsville City Council  
P.O. Box 1112  
55 West Church Street  
Martinsville, VA 24112

Dear Mayor Turner and Members of the City Council:

On behalf of the American Public Health Association, a diverse community of public health professionals who have championed the health of all people and communities around the world for more than 140 years, I write to urge you to maintain the fluoridation of community water supplies in Martinsville. APHA has supported community water fluoridation as a safe and effective means of preventing tooth decay for more than 60 years. APHA most recently reiterated its support for community water fluoridation by adopting the policy statement [\*Community Water Fluoridation in the United States\*](#) in 2008.

The overwhelming preponderance of scientific evidence supports community water fluoridation as a safe, effective and cost-saving public health measure for the prevention of dental caries that benefits all segments of the community. The Centers for Disease Control and Prevention recognized water fluoridation as one of ten great public health achievements of the twentieth century. The U.S. government's *Healthy People* initiative has included the expansion of community water fluoridation as a national health objective in each iteration since it began in 1990, including the *Healthy People 2020* health objectives for the nation.

Consistent with the recommendation of virtually every major public health, medical and dental organization in the United States, APHA urges you continue the important public health strategy of community water fluoridation.

Sincerely,

A handwritten signature in black ink that reads "Georges C. Benjamin". The signature is written in a cursive, flowing style.

Georges C. Benjamin, MD  
Executive Director

Cc: City Manager Leon E. Towarnicki



July 8, 2015

Leon Towarnicki, City Manager  
[ltowarnicki@ci.martinsville.va.us](mailto:ltowarnicki@ci.martinsville.va.us)  
Karen Roberts, Executive Assistant to the City Manager  
[kroberts@ci.martinsville.va.us](mailto:kroberts@ci.martinsville.va.us)  
55 W. Church Street  
Martinsville, VA 24112  
*Sent via email*

Mr. Towarnicki and Ms. Roberts:

Because the Martinsville City Council is exploring the topic of community water fluoridation, the Children's Dental Health Project (CDHP) wishes to share information summarizing the evidence about fluoridation's safety and effectiveness. CDHP is an independent, nonprofit organization that monitors research, and we advise federal and state policymakers on oral health issues. Please share copies of this letter with members of your city council.

Fluoride is a mineral that exists naturally in public water supplies but usually at a concentration that is too low to prevent tooth decay. This explains why so many U.S. communities choose to fortify their water with additional fluoride.<sup>1</sup> And it's why the vast majority of public water systems in Virginia engage in fluoridation.<sup>2</sup> The Centers for Disease Control and Prevention (CDC) reports that fluoridated water reduces tooth decay by about 25 percent over a person's lifetime.<sup>3</sup>

**What is at stake:** Although America's dental health has improved significantly in recent decades, tooth decay is the most common chronic disease of early childhood—five times more prevalent than asthma.<sup>4</sup> Research shows that children with dental problems are much more likely to miss school, and teens with a recent toothache are four times more likely to struggle academically.<sup>5</sup> In 2013, a CNBC story pointed out one of the consequences for adults with unhealthy or missing teeth: “In America, most people—including employers—make instant judgments based on appearance, including someone's smile and teeth.”<sup>6</sup> Clearly, prevention is the best way to avoid the pain, cost and other negative impacts of tooth decay.

**A strategy that saves money in two ways:** Community water fluoridation is the most cost-effective health measure for preventing decay.<sup>7</sup> First, it saves money for families who would otherwise pay for more frequent fillings, crowns and other dental treatments. The lifetime cost of a single decayed molar can exceed \$6,000.<sup>8</sup> Even families with dental insurance can face significant out-of-pocket costs when they need dental procedures. Second, fluoridation saves money for taxpayers. For example, a Texas study confirmed that the state saved \$24 *per child, per year* in Medicaid costs for children because of the cavities that were prevented by drinking fluoridated water.<sup>9</sup> For these reasons, ending fluoridation can impose a hidden tax on residents.

**Decades of research have produced a strong consensus supporting fluoridation:** The ability of fluoridated water to prevent cavities has been established by hundreds of studies and research papers.<sup>10</sup> Ample evidence shows that fluoridated water is safe.<sup>11</sup> This solid research is why the American Academy of Pediatrics, the American Dental Association, the Institute of Medicine and other respected medical/health organizations endorse fluoridation.<sup>12</sup> The CDC named water fluoridation one of “10 great public health achievements of the 20th century.”<sup>13</sup> In 2013, the deans of Harvard University’s three leading health institutions called fluoridation “an effective and safe public health measure for people of all ages.”<sup>14</sup>

**Drinking fluoridated water builds on the benefits of brushing with fluoride toothpaste:** Although toothbrushing is crucial, numerous studies confirm that fluoridated water provides important, added protection against tooth decay. Over the past several years, studies in Nevada, Alaska and New York have demonstrated that kids in fluoridated communities have better oral health.<sup>15</sup> The Nevada study found that living in a community *without* fluoridated water was one of the top three risk factors for teens having dental problems.<sup>16</sup> A 2013 research paper concluded that community water fluoridation “is still the optimal method” for providing fluoride to the public.<sup>17</sup>

**Fluoridated water benefits adults too:** Fluoridation has played a key role in helping to reduce tooth loss among adults by at least 40 percent.<sup>18</sup> A 2013 study showed that adults who were born before fluoridation became widespread but who resided in fluoridated areas for at least three-quarters of their lives had 30 percent less decay than those who resided in fluoridated communities for less than one-quarter of their lives.<sup>19</sup>

**Fluoridation remains an important strategy, even when topical fluoride treatments are available:** Anti-fluoride activists claim that only fluoride that is applied topically prevents decay, but the scientific evidence tells a different story. Drinking fluoridated water significantly raises the concentration of fluoride in saliva—making the surface of tooth enamel more resistant to decay.<sup>20</sup> As the CDC explains, fluoride in water “comes in contact with the teeth every time you drink tap water or beverages made from tap water, as well as foods prepared with tap water.”<sup>21</sup> *This regular, ongoing exposure to fluoride is crucial to protecting teeth from cavities.*

**Fluoridation is safe:** Numerous studies and reviews have demonstrated the safety of fluoridated water. The Toxicology Excellence for Risk Assessment, an independent U.S. research organization, explains that “medical scientists have agreed that small concentrations of fluoride have health benefits that vastly exceed any hypothetical health risk.”<sup>22</sup> U.S. fluoridation practices are held to high standards of quality and safety. These additives’ quality and safety are ensured by Standard 60—a set of guidelines developed at the request of the Environmental Protection Agency (EPA). Hundreds of samples have been taken and tested under Standard 60 to confirm the quality and purity of fluoride additives.<sup>23</sup>

Unfortunately, people searching “fluoride” or “fluoridation” online will encounter various inaccurate or misleading statements. Many web pages posted by anti-fluoride groups misrepresent what the research shows:

- Opponents often cite studies from overseas that are flawed or do not reflect how fluoridation is practiced in the U.S. For example, opponents’ claim that fluoride lowers children’s IQ scores is based on flawed studies from areas of China and Iran where the fluoride concentration in water reached levels as high as 11.5 parts per million—roughly 10 times higher than the level used to fluoridate in the U.S.<sup>24</sup> Further, these studies failed to fully account for lead, arsenic or other factors that could affect IQs. (Many of China’s

water supplies are severely polluted.<sup>25</sup>) Even the leader of an anti-fluoride group admitted that criticisms of the methodology of these studies were “fair” and “reasonable.”<sup>26</sup> The Harvard researchers who reviewed these studies distanced themselves from the way anti-fluoride groups have interpreted the results.<sup>27</sup> In addition, a large-scale study published in 2014 by the *American Journal of Public Health* found no link at all between fluoride levels in water and IQ scores.<sup>28</sup>

- Opponents have misrepresented reports. Opponents of fluoridation misinterpret the 2006 report issued by a National Research Council (NRC) committee. The NRC report examined the possibility of health concerns in U.S. communities where the *natural* fluoride levels in well water or aquifers are unusually high. Those natural fluoride levels are significantly higher than the level used to fluoridate public water systems. The NRC itself explained that its report was *not* an evaluation of water fluoridation.<sup>29</sup> In 2013, John Doull, the highly respected toxicologist who chaired the NRC committee, said he did not see “any valid scientific reason for fearing adverse health conditions from the consumption of water fluoridated at the optimal level.”<sup>30</sup>
- Opponents are guided by false assumptions. One example is the May 29th email that members of the Martinsville City Council received from a critic who complained that the Food and Drug Administration (FDA) “has never approved” fluoride’s use in drinking water. This person’s complaint is based on a false assumption. The FDA does not regulate fluoride in public water systems. The Environmental Protection Agency (EPA) is the agency with jurisdiction over fluoride in a community’s drinking water. Under the Safe Drinking Water Act, the EPA sets a maximum fluoride level for public water systems.<sup>31</sup>

**Health experts continue to endorse fluoridation.** For 70 years, drinking water in the U.S. has been fortified with fluoride, and the scientific evidence shows this practice has improved Americans’ health and well-being. For many years, the U.S. Surgeons General have consistently recommended fluoridation, regardless of the president who appointed them.<sup>32</sup>

We hope this information is helpful as you explore this topic. Please contact CDHP’s Matt Jacob at [mjacob@cdhp.org](mailto:mjacob@cdhp.org) if you have any questions. The footnotes that follow provide links to the original studies or reports that we have cited.

Sincerely,



Patrice Pascual  
Executive Director  
Children’s Dental Health Project

## Sources

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<sup>1</sup> “2012 Water Fluoridation Statistics,” Centers for Disease Control and Prevention, <http://www.cdc.gov/fluoridation/statistics/2012stats.htm>.

<sup>2</sup> See state statistics in “2012 Water Fluoridation Statistics,” Centers for Disease Control and Prevention, page updated on November 22, 2013, <http://www.cdc.gov/fluoridation/statistics/2012stats.htm>.

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- <sup>3</sup> “Fluoridation Basics,” Centers for Disease Control and Prevention, July 25, 2013, <http://www.cdc.gov/fluoridation/basics/index.htm>
- <sup>4</sup> For data illustrating the decline in tooth decay, see: “Dental Caries (Tooth Decay) in Adolescents (Ages 12-19),” National Institute of Dental and Craniofacial Research, <http://www.nidcr.nih.gov/DataStatistics/FindDataByTopic/DentalCaries/DentalCariesAdolescents12to19>; “Preventing Cavities, Gum Disease, Tooth Loss, and Oral Cancers: At A Glance 2010,” Centers for Disease Control and Prevention (2010), <http://www.cdc.gov/chronicdisease/resources/publications/AAG/doh.htm>.
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- <sup>7</sup> Fluoridation’s status as the most-cost effective way to prevent tooth decay was noted by U.S. Surgeon General Richard Carmona in 2004, and it was the conclusion reached in a 2002 report by the National Institute of Dental and Craniofacial Research (NIDCR). For more information, see Dr. Carmona’s statement at <http://www.nidcr.nih.gov/OralHealth/Topics/Fluoride/StatementWaterFluoridation.htm>. The NIDCR’s conclusion can be accessed at [http://drc.hhs.gov/report/2\\_0.htm](http://drc.hhs.gov/report/2_0.htm).
- <sup>8</sup> Based on data from “Lifetime Costs of a Cavity (Delta Dental),” Children’s Dental Health Project, <https://www.cdhp.org/resources/298-lifetime-costs-of-a-cavity-by-delta-dental>.
- <sup>9</sup> “Savings from Water Fluoridation: What the Evidence Shows,” Pew Center on the States, 2011, <http://www.dmww.com/upl/documents/library/savings-from-fluoridation.pdf>.
- <sup>10</sup> “Is Fluoridation Effective?” Campaign for Dental Health, 2012, <http://www.ilikemyteeth.org/fluoridation/effects-of-fluoride/>.
- <sup>11</sup> “National Academy of Sciences on Fluoride in Drinking Water,” Centers for Disease Control and Prevention, July 25, 2013, <http://www.cdc.gov/fluoridation/safety/nas.htm>.
- <sup>12</sup> “Protecting All Children’s Teeth (PACT),” a training module by the American Academy of Pediatrics, accessed on Jan. 20, 2011 at [http://www.aap.org/oralhealth/pact/ch6\\_intro.cfm](http://www.aap.org/oralhealth/pact/ch6_intro.cfm); “Fluoride & Fluoridation,” American Dental Association, accessed on Jan. 12, 2011 at <http://www.ada.org/fluoride.aspx>; *Improving Access to Oral Health Care for Vulnerable and Underserved Populations*, Institute of Medicine (2011), 63, [http://books.nap.edu/openbook.php?record\\_id=13116](http://books.nap.edu/openbook.php?record_id=13116).
- <sup>13</sup> “Ten Great Public Health Achievements – United States, 1900-1999,” Centers for Disease Control and Prevention, *Morbidity and Mortality Weekly Report*, April 2, 1999, Vol. 48, No. 12, 241-243, accessed on January 25, 2011 at: <http://www.cdc.gov/mmwr/preview/mmwrhtml/00056796.htm>.
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- <sup>26</sup> Paul Connett, executive director of the Fluoride Action Network, remarks delivered at the Glaser Center in Santa Rosa, Calif., October 21, 2013. (Note: Connett’s relevant statement was made at approximately 0:59:35 of the video at <http://www.cleanwateronmamarin.org/get-the-facts/the-case-against-fluoride/>.)
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- <sup>29</sup> “Fluoride in Drinking Water: A Scientific Review of EPA’s Standards,” Report in Brief, prepared by the National Research Council (March 2006), accessed in July 2015 at [http://dels.nas.edu/resources/static-assets/materials-based-on-reports/reports-in-brief/fluoride\\_brief\\_final.pdf](http://dels.nas.edu/resources/static-assets/materials-based-on-reports/reports-in-brief/fluoride_brief_final.pdf).
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To: Mayor and City Council, Martinsville  
From: James W. Reeves, Ph.D.  
Retired Professor of Civil Engineering  
Lafayette, LA  
Tel. 337 981-3255

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### Fluoridation: Dangerous & A Waste of Tax Money

Several years ago our local group presented the truth about the ineffectiveness and health dangers of fluoridation and convinced our city council to reject it by a vote of 8 to 1.

It is illegal for a doctor or a dentist to force anyone to take a drug or a chemical, particularly one not approved by the FDA.

It should be illegal for the government as well. Everyone deserves freedom of choice.

#### THE FACTS:

- Fluoridation has been tested in the courts, and no court of last resort has ever determined fluoridation to be unlawful. Moreover, fluoridation has been clearly held not to be an unconstitutional invasion of religious freedom or other individual rights guaranteed by the First, Fifth, or Fourteenth Amendments to the U.S. Constitution. The court findings have been based on the following legal principles:
  1. The health and welfare of the public overrides individual's objections to public health regulations.
  2. Fluoride is a nutrient, not a medication, and is present in the natural environment.
  3. No one is forced to drink the water as alternative sources are available.
  4. The law holds that there is a difference between the freedom to believe, which is absolute, and the freedom to practice beliefs which may be restricted in the public's interest.<sup>1,2,3,4,5,6,7</sup>
- Fluoridation is the adjustment of *natural* water fluoride levels to bring them to the optimum level. America has a tradition of fortifying foods and beverages to protect human health. Fortification is a common practice - Folic acid, Vitamin D, Iodine. U.S. courts have rejected the idea that fluoride is a medication and should not be allowed in water supply.
- Fluoridation additives used in the United States must meet the quality standards of the American Water Works Association (AWWA) and NSF International (NSF). The American National Standards Institute endorses both the AWWA and NSF standards for fluoridation. These standards include material handling properties, safety concerns, purity, and contaminants.<sup>8,9,10,11,12,13,14</sup>
- Product safety and purity is verified and validated by independent certification entities. Further, in Virginia, the Office of Drinking Water's regular sanitary inspections specifically evaluate fluoride chemicals for NSF approval labeling/documentation.
- Information on fluoridation chemicals and these standards are available from the CDC at <http://www.cdc.gov/fluoridation/faqs/additives.htm> and <http://www.cdc.gov/fluoridation/factsheets/engineering/wfadditives.htm>.

As the CDC admitted in 1999, fluoride toothpaste applied to the surface of teeth is sufficient.

#### THE FACTS:

- The benefits of community water fluoridation (CWF) build on those from fluoride in toothpaste. Studies conducted in communities that fluoridated water in the years after fluoride toothpastes became common have shown a lower rate of tooth decay than communities without fluoridated water.<sup>15</sup>
- 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.<sup>16</sup>

- 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%.<sup>17</sup> Even today, fluoridated water plays a critical role of maximizing protection against decay.
- A study of Illinois and Nebraska communities found that the tooth decay rate among children in the fluoridated town was 45% lower than the rate among kids in the non-fluoridated communities. This benefit occurred even though the vast majority of children in all of these communities had been brushing with fluoride toothpaste.<sup>18</sup>
- The co-author of a 2010 study noted that research has confirmed “the most effective source of fluoride to be water fluoridation.”<sup>19</sup>
- Fluoride toothpaste alone is not enough, which is why pediatricians and dentists often prescribe fluoride tablets to children living in non-fluoridated areas.
- In 2011, the U.S. Centers for Disease Control and Prevention (CDC) reviewed whether using toothpaste with fluoride alone was enough. After looking at all the ways we might get fluoride—including fluoride toothpaste—the CDC recommended that communities fluoridate water at 0.7 parts per million (ppm). Any less than that put the health of our teeth at risk.<sup>20</sup>
- Because of its contribution to the dramatic decline in tooth decay over the past 70 years, CDC strongly recommends community water fluoridation and named community water fluoridation one of ten great public health achievements of the 20th century.<sup>21</sup>

Many research studies show that dumping the industrial toxic waste fluoride product, hydrofluorosilicic acid, into our water system has limited effect on the rate of tooth decay in children.

#### THE FACTS:

- The benefits (and safety) of fluoride in children are well documented and have been reviewed comprehensively by numerous scientific and public health organizations.
- According to the American Academy of Pediatrics (AAP), optimal exposure to fluoride is important to infants and children. The use of fluoride for the prevention and control of cavities is documented to be both safe and effective.<sup>22</sup>
- 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 is not fluoridated.<sup>23</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% between 1966 and 1994.<sup>21</sup>
- In 2002, a national task force of experts reviewed 21 fluoride-related studies qualified for review and found that the median decay rate was reduced by 29% in children aged 4 to 17 when measured before and after water fluoridation. Additionally, there was a 50.7% median decrease in decay rates of children measured only after water fluoridation. Fluoridation was found to help decrease tooth decay both in communities with varying decay rates and among children of varying socioeconomic status.<sup>24</sup>
- The evidence supporting fluoridated water’s effectiveness in children has continued 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% more fillings, root canals, and extractions than those in counties where fluoridated water was common.<sup>25</sup>
  - A study of Alaska children (2011) showed that kids living in non-fluoridated areas had a 32% higher rate of decayed, missing, or filled teeth than kids in fluoridated communities.<sup>26</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>27</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>28</sup>
- Teenagers living in non-fluoridated areas of Northern Ireland had an average rate of decayed, missing or filled teeth that was 71% higher than those living in fluoridated communities of Ireland.<sup>29</sup>
- Research demonstrates the long-term benefits of fluoridation in children. 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. 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>30</sup>
- Fluoride, at the concentrations found in optimally fluoridated water, is not toxic according to generally accepted scientific knowledge. Acute fluoride toxicity occurring from ingestion of optimally fluoridated water is impossible.<sup>31</sup> The amount of fluoride necessary to cause death for a human adult (155 lb. man) has been estimated to be 5 – 10 grams of sodium fluoride, ingested at one time.<sup>32</sup> This is more than 10,000 – 20,000 times as much fluoride as is consumed at one time in a single eight ounce glass of optimally fluoridated water.

**Fluoride is not a nutrient. It heals or cures nothing. Scientists report that there is no condition in the body caused by a fluoride deficiency.**

#### THE FACTS:

- Fluoride is a nutrient—not a medication.<sup>33</sup> Medicine is used to cure or control a medical problem that has already been diagnosed, such as hay fever or high blood pressure. Fluoridated water is not a cure; it’s a proven way to prevent a medical problem—tooth decay.
- U.S. court decisions have rejected the argument that fluoride is a medication that should not be allowed in water.<sup>34</sup> 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.”
- The Food and Nutrition Board at the Institute of Medicine (IOM) has established a recommended daily intake for fluoride, and a 2002 IOM committee recognized fluoride as a nutrient<sup>35,36</sup>
- There are two proven benefits for public health that come from having the optimal level of fluoride in the water—preventing tooth decay and contributing to healthy bones.
- Fortifying drinking water with fluoride is a lot like fortifying milk with vitamin D. These additives prevent poor health. America has a history of fortifying foods or beverages to strength health—for example, adding iodine to table salt, fortifying milk with vitamin D, and adding folic acid to breads and cereals.
- Fluoride exists naturally in virtually all water supplies and even in various brands of bottled water.<sup>37,38</sup>

**Much worse, other research shows that it causes reduced IQ in children, enamel damage (dental fluorosis) in 41% of children (CDC data), cancer, brittle bones, arthritis, thyroid gland damage and other severe health problems in both children and adults.**

#### THE FACTS:

- No generally accepted scientific evidence has been found linking community water fluoridation (CWF) with any potential adverse health effect or systemic disorder.
- Of the thousands of credible scientific studies on fluoridation, none has shown health problems associated with the consumption of optimally fluoridated water.
- After 70 years of research and practical experience, the preponderance of scientific evidence indicates that fluoridation of community water supplies is both safe and effective.

- The conclusion of the scientific community is that water fluoridation, at recommended levels, safely provides oral health benefits.
- Very high fluoride concentrations can lead to a condition called fluorosis.
  - Dental fluorosis is a change in the appearance of the tooth’s enamel surface. Nearly all fluorosis in the U.S. is mild, leaving faint white markings on teeth. It does not cause pain, and it does not affect the health or function of the teeth. It is so subtle that only a dental professional can correctly identify it. Less than one-quarter of the persons aged 6-49 had any dental fluorosis and, of those, less than 1% had severe fluorosis. Moderate to severe fluorosis is associated primarily with naturally occurring elevated fluoride in drinking water (greater than 4 mg per liter of water).<sup>39</sup>
  - Fluorosis results from increased consumption of fluoride, over an extended period of time, while the teeth are developing under the gums. One source is toothpaste, which contains a much higher concentration of fluoride than optimally fluoridated water.<sup>40</sup> This is why parents of children under the age of six are advised to supervise their kids’ tooth-brushing and apply the age-appropriate amount of toothpaste to the toothbrush.<sup>41</sup>
  - 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.<sup>42</sup>
  - Fluoride opponents use photos of people with a severe form of fluorosis to paint an inaccurate picture of fluorosis. Severe cases of fluorosis are almost unheard of in the U.S. Less than 1% of dental fluorosis in the U.S. is severe.<sup>43</sup> People who live in countries where the water supply has extremely high, natural levels of fluoride can have severe fluorosis. The fluoride in these water supplies is not adjusted down to the optimal level that is used to fluoridate public water systems in the U.S.
  - Dental fluorosis occurs among some people in all communities, even those that do not fluoridate their local water systems. For example, fluorosis occurs in countries like Norway, which does not fluoridate its public water systems.<sup>44</sup>
  - 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.<sup>20</sup>
- Anti-fluoride groups cite many “studies” that were poorly designed, gathered unreliable data, and were not peer-reviewed by independent scientists. The foreign studies that anti-fluoride activists cite involved fluoride levels that were at least double or triple (and sometimes five to ten times) the level used to fluoridate drinking water in the U.S.

Also consider the economics, which is very well known by all Civil Engineers and water managers. People actually drink less than one percent of the water that they use. The remainder is used in toilets, showers, washing machines, watering lawns, etc. Therefore, for your budget of \$15,000 of fluoride added annually, only \$150 of fluoride would be contained in the water people drink, and \$14,850 of it would be wasted down the drain. The young children, for whom fluoride is intended, would consume water containing only \$15 of fluoride.

#### THE FACTS:

- Ending fluoridation is not a way to save tax dollars. In fact, ending fluoridation imposes a hidden “tax” on families, taxpayers, and the health care system because it is likely to increase their dental expenses to treat decayed teeth.<sup>45</sup>
- 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 (for systems serving more than 20,000 people) and \$2.70 (for systems serving fewer than 5,000 people) per person, per year—less than the cost of medium-sized latte from Starbucks!<sup>46</sup>
- Two published studies conducted by CDC reaffirm the benefits of community water fluoridation. Together, the studies continue to show that widespread community water fluoridation prevents cavities and saves money, both for families and the health care system. In fact, the economic analysis found that for larger communities of more than 20,000 people where it costs about 40 - 50 cents per person per year to fluoridate the water, every \$1 invested in this preventive measure yields approximately \$38 savings in dental treatment costs.<sup>47</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>48</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>49</sup>
- Scientists who testified before Congress in 1995 estimated that national savings from water fluoridation totaled more than \$3.8 billion each year.<sup>50</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>51</sup> A New York study found that Medicaid enrollees in counties where fluoridation was rare needed 33.4% more fillings, root canals, and extractions than those in counties where fluoridated water was much more prevalent.<sup>52</sup>
- Although other fluoride-containing products such as mouth rinses and dietary supplements are available and contribute to the prevention and control of dental caries, community water fluoridation has been identified as the most cost-effective method of delivering fluoride to all members of the community regardless of age, educational attainment, or income level.<sup>53,54</sup> 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>55</sup>
- Analyses have also shown that water fluoridation provides additional benefits across the lifespan beyond what is gained from using other fluoride-containing products.<sup>56,57,58</sup>

This waste is comparable to buying one gallon of milk, using six-and-one-half drops of it, and pouring the rest of the gallon in the sink.

#### THE FACTS:

- It is technically difficult, perhaps impossible, and certainly more costly to fluoridate only the water used for drinking. Community water that is chlorinated, softened, or in other ways treated is also used for watering lawns, washing cars, and for most industrial purposes. The cost of additives for fluoridating a community's water supply is inexpensive on a per capita basis; therefore, it is practical to fluoridate the entire water supply than to attempt to treat individual water sources.<sup>59</sup>
- Fluoride is but one of more than 40 different chemicals/additives that may be used to treat water in the United States. Most are added for aesthetic or convenience purposes such as to improve the odor or taste, prevent natural cloudiness, or prevent staining of clothes or porcelain.<sup>59</sup>
- The American Water Works Association, an international nonprofit scientific and educational society dedicated to the improvement of drinking water quality and supply, supports the practice of fluoridation of public water supplies.<sup>60</sup>

The world has mostly rejected fluoridation with only 5% of all populations drinking fluoridated water; in Europe it is only 3%; and in the U.S. it is 74% (more than the rest of the world combined). Israel banned fluoridation last year, and since 2010 over 150 communities around the world have voted out this outdated and discredited practice.

#### THE FACTS:

- The world has not rejected fluoridation. Over 405 million people in more than 60 countries worldwide enjoy the benefits of fluoridated water. The value of water fluoridation is recognized internationally. Countries and geographic regions with extensive water fluoridation include the U.S., Australia, Brazil, Canada, Chile, Columbia, Ireland, Israel, Malaysia, New Zealand, People's Republic of China (Hong Kong only), Singapore, and the United Kingdom.<sup>61</sup>
- 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 13 million Europeans, mostly residents of Great Britain, Ireland and Spain.<sup>62</sup> Fluoridated milk programs reach millions of additional Europeans, mostly in Eastern Europe.<sup>63</sup>

- 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.<sup>64</sup>
- Italy has not tried to create a national system of water fluoridation for two reasons—cultural and geological. First, the drinking of bottled water is well-established in Italian culture. Second, a number of areas in Italy have water supplies with natural fluoride levels that already reach the optimal level that prevents decay.<sup>65</sup>
- Technical challenges are a major reason why fluoridated water is not widespread in Europe. In France and Switzerland, for example, water fluoridation is logistically difficult because of the terrain and because there are tens of thousands of separate sources for drinking water. This is why Western Europe relies more on salt fluoridation, fluoride rinse programs, and other means to get fluoride to the public. Salt fluoridation reflects the position of the World Health Organization, which has recommended that "salt fluoridation should be considered where water fluoridation is not feasible for technical, financial or socio-cultural reasons."<sup>66,67</sup>
- No country in Europe has banned community water fluoridation. It has simply not been implemented for a variety of technical, legal, financial, or political reasons. Political actions contrary to the recommendations of health authorities should not be interpreted as a negative response to water fluoridation. For example, although fluoridation is not carried out in Sweden and the Netherlands, both countries support World Health Organization's recommendations regarding fluoridation as a preventive health measure, in addition to the use of fluoride toothpastes, mouth rinses, and dietary fluoride supplements.<sup>68,69</sup>
- The claim that fluoridation is banned in Europe is frequently used by fluoridation opponents. In truth, European countries construct their own water quality regulations within the framework of the 1980 European Water Quality Directive. The Directive provides maximum admissible concentrations for many substances, one of which is fluoride. The Directive does not require or prohibit fluoridation, it merely requires that the fluoride concentration in water does not exceed the maximum permissible concentration.<sup>70</sup>
- Israel and 150 other countries around the world have not voted against community water fluoridation.
- In the United States, community water fluoridation is achieved through the excellence of infrastructure of community water systems. Over 70 years of practical experience and engineering expertise within the United States are important to acknowledge when comparing the water treatment practices of other countries.
- Just as information from other countries does not necessarily match the standards of air and water quality and standard of living in the United States, this is also relevant in public health measures (fluoride modalities) to prevent decay. The Virginia Department of Health, Office of Drinking Water is vigilant in the oversight of water facility compliance.

**Data from the World Health Organization shows that the tooth decay rate in Europe (3% fluoridated) is as good as or better than any fluoridated country. This shows how ineffective fluoridation is for teeth.**

#### THE FACTS:

- Europe has used a variety of programs to provide fluoride's benefits to the public. Water fluoridation is one of these programs. Fluoridated water reaches 13 million Europeans, mostly residents of Great Britain, Ireland and Spain.<sup>71</sup> Fluoridated milk programs reach millions of additional Europeans, mostly in Eastern Europe.<sup>63</sup>
- 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.<sup>72</sup>
- It is erroneous to compare fluoridation and tooth decay rates from state to state or internationally as proof that fluoridation does not reduce tooth decay.
- Water fluoridation is one important way to prevent tooth decay, but even where it is present, many other factors contribute to rates of decay. For example, research confirms that low-income people are more at risk for decay than upper income Americans.<sup>73</sup>

- This makes sense because income status shapes how often a person visits a dentist, their diet and nutrition, and other confounding factors.
- Comparing different states or countries based solely on fluoridation rates ignores these key income differences. For example, in the U.S., West Virginia and Connecticut reach roughly the same percentage of their residents with fluoridated water—91% and 90%, respectively. Yet the percentage of West Virginians living below the poverty line is nearly double the percentage of those living in Connecticut.<sup>74</sup>
- A more reliable comparison would examine decay-related problems of people in the same state or country and income group. A 2010 New York study did precisely this—comparing Medicaid enrollees in counties where fluoridation was prevalent to enrollees in counties where most communities were not fluoridated. The study found that residents of counties where fluoridated water was rare needed 33% more fillings, root canals, and extractions than those in counties where fluoridated water was common.<sup>52</sup>
- Community water fluoridation is recommended by nearly all public health, medical, and dental organizations including the World Health Organization, American Dental Association, American Academy of Pediatrics, U.S. Public Health Service, and Centers for Disease Control and Prevention to name a few.

The health of our communities depends on stopping fluoridation. For further information, read the book by New York scientist Dr. Paul Connett and two other scientists (one an M.D.), *“The Case Against Fluoride: How Hazardous Waste Ended Up in Our Drinking Water and the Bad Science and Powerful Politics That Keep It There.”* It contains over 1200 scientific references (over 80 pages).

The issue is summed up very well with a short quote from Dr. Hardy Limeback, DDS, Ph.D., Head of Preventative Dentistry, University of Toronto:

***“The evidence that fluoride is more harmful than beneficial is now overwhelming... fluoride may be destroying our bones, our teeth, and our overall health.”***

#### THE FACTS:

- Fluoridation is not predicated on only one study or only one source. It is based on the preponderance of peer-reviewed credible scientific evidence. Besides individual studies, we look to evidence reviews as perhaps the best sources of evidence. The reviews follow rigorous scientific protocol. Highly educated, multi-disciplinary health professions and researchers make up the expert panels. The diverse expert panels evaluate not only the results, but also the quality of the research such as reproducibility, cross control, study size, and duration. Links to the full reviews can be found at: <http://www.vahealth.org/dental/communitywaterfluoridation/links.htm>. The overwhelming majority of research concludes the safe and effective use of optimally fluoridated water to reduce the disease of dental decay.
- The Internet and World Wide Web are evolving as accessible sources of information. However, not all “science” posted on the Internet and World Wide Web is based on scientific fact. Searching the Internet for “fluoride” or “water fluoridation” directs individuals to a number of websites. Some of the content found in the sites is scientifically sound. Other less scientific sites may look highly technical, but contain information based on “science” that is unconfirmed or has not gained widespread acceptance. Commercial interests, such as the sale of water filters, may also be promoted.
- Individuals who look to the Internet as a source of reliable information may fail to recognize that these sites often contain personal opinion rather than scientific fact. Newspaper stories, press releases and letters to the editor are often posted as documentation of the “science” behind antifluoridationists’ claims. All too often, the public accepts this type of information as true simply because it is in print.
- “Junk science,” a term coined by the press and used over the past decade to characterize data derived from atypical or questionable scientific techniques, also can play a role in provoking opposition to water fluoridation. In fact, decision makers have been persuaded to postpone action on several cost-effective public health measures after hypothetical risks have made their way into the public media.<sup>75</sup> Junk science impacts public policy and costs society in immeasurable ways. More people, especially those involved in policy decisions, need to be able to distinguish junk science from legitimate scientific research. Reputable science is based on the scientific method of testing hypotheses in ways that can be reproduced and verified by others; junk science, which often provides too-simple answers to complex questions, often cannot be substantiated.

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In the USA, the FDA has never approved this industrial waste fluoride drug as safe and effective for human consumption. It is the only drug on the market without this approval.

#### THE FACTS:

- The Food and Drug Administration (FDA) does NOT regulate water systems, and therefore, does not approve any water additive.
- The Environmental Protection Agency (EPA) regulates additives in drinking water.
- As noted earlier, fluoride is not a medication. It is a nutrient, and when present at the right level, fluoride in drinking water has two beneficial effects: preventing tooth decay and contributing to healthy bones. Medicine is used to cure or control a medical problem that has already been diagnosed, such as hay fever or high blood pressure. Fluoridated water is not a cure; it's a proven way to prevent a medical problem—tooth decay.
- Sodium fluoride, sodium fluorosilicate, and fluorosilicic acid are the three basic additives approved for community water fluoridation in the United States. Sodium fluorosilicate and fluorosilicic acid are sometimes referred to as silicofluoride additives.<sup>59,76</sup> There are no adverse health effects associated with water fluoridation regardless of which fluoride additive is used.
- Fluoride additives, like all of the more than 40 additives typically used in water treatment (such as chlorine, ferrous sulfate, hydrochloric acid, sulfur dioxide, and sulfuric acid), are "industrial grade" additives.<sup>59</sup>
- Additives used in water treatment meet safety standards prepared in response to a request by the Environmental Protection Agency (EPA) to establish minimum requirements to ensure the safety of products added to water for its treatment, thereby ensuring the public's health. Specifically, fluoride additives used in water fluoridation meet standards established by the American Water Works Association (AWWA) and NSF International (NSF). Additionally, the American National Standards Institute (ANSI) endorses both AWWA and NSF standards for fluoridation additives and includes its name on these standards.<sup>77,78,11,12,76</sup>
- The quality and safety of fluoride additives are ensured by Standard 60, a program commissioned by the Environmental Protection Agency (EPA). Standard 60 is a set of standards created and monitored by an independent committee of health experts. This committee provides regular reports to the EPA. More than 80% of fluoride additives are produced by U.S. companies, but no matter where they come from, Standard 60 uses on-site inspections and even surprise "spot checks" to confirm the additives meet quality and safety standards.<sup>13,14</sup>

Fluoride was grandfathered in years ago, because at the time it was already being used for rat poison, roach poison and pest control. In fact, fluoride is still used today in those effective poisons.

#### THE FACTS:

- The anti-fluoride groups stir up controversy surrounding the use of fluoride in products developed for human ingestion—such as community water fluoridation. This is largely due to the fact that the first widespread use of fluoride-containing products was for the eradication of rodents and insects.
  - At one time, high concentrations of fluoride additives were used in insecticides and rodenticides.<sup>59</sup> Today fluoride additives are no longer used in rat poisons sold in the U.S. (EPA canceled all uses in 1972) and rarely used in pesticides because more effective additives have been developed.<sup>79,80,81</sup>
- While large doses of fluoride may be toxic, it is important to recognize the difference in the effect of a massive dose of an extremely high level of fluoride versus the recommended amount of fluoride found in optimally fluoridated water. The implication that fluorides in large doses and in trace amounts have the same effect is completely unfounded. Many substances in widespread use are very beneficial in small amounts, but may be harmful in large doses—such as salt, chlorine, and even water itself!

- The possibility of adverse health effects from continuous low level consumption of fluoride over long periods has been studied extensively. As with other nutrients, fluoride is safe and effective when used and consumed properly.
- Opponents also use the misleading message—“Fluoride is a by-product of the phosphate fertilizer industry!” to associate fluoride with fertilizer and other industrial waste.<sup>82</sup>
  - Fluoride is extracted from apatite which is a type of limestone deposit used in the production of phosphate fertilizers. Apatite contains 3-7% fluoride and is the main source of fluorides used in water fluoridation.<sup>59</sup>
  - Phosphoric acid, which is the main ingredient in the production of phosphate fertilizer, is also extracted from apatite.<sup>83,84</sup>
  - Phosphoric acid is an ingredient in Coke and Pepsi.
  - Neither fluoride additives nor phosphoric acid comes from fertilizer.<sup>84</sup>

You should demand from your supplier one, *just one*, scientific study to prove that hydrofluorosilicic acid is *safe and effective* for all of the public; the infants, the children, the elders, those with allergies, kidney problems (pre-diabetics), and others with health problems.

***There are no such studies***, so the failure to produce one should be reason enough to reject adding this industrial toxic waste fluoride drug, hydrofluorosilicic acid, to drinking water.

#### THE FACTS:

- The techniques used by antifluoridationists are well known and have been discussed at length in a number of published articles that review the tactics used by antifluoridationists. Such tactics include targeting politicians and community leaders, unproven claims, innuendos, outdated studies and statements from “experts”, statements out of context, frequently changing theories of opposition, and clever use of emotionally charged “scare” propaganda.<sup>85,2,86,87,88,89,90,91</sup>
- Reliable information about fluoride and water fluoridation can be found on the Internet and World Wide Web. These sites provide information that is consistent with generally accepted scientific knowledge.
  - One of the most widely respected sources for information regarding fluoridation and fluorides is the American Dental Association’s (ADA) Fluoride and Fluoridation Web site at <http://www.ada.org/goto/fluoride>. From the ADA Web site individuals can link to other Websites, such as American Dental Association, the Centers for Disease Control and Prevention, National Institute of Dental and Craniofacial Research, Institute of Medicine, National Cancer Institute, and state/local health departments for more information about fluoride and water fluoridation. Other respected health and medical sources of credible scientific information include the World Health Organization, American Medical Association, American Academy of Pediatrics, American Academy of Family Physicians, and the American Public Health Association.
- Leading health and medical authorities endorse community water fluoridation. The CDC reports that “panels of experts from different health and scientific fields have provided strong scientifically-sound evidence that water fluoridation is safe and effective.”<sup>92</sup>
- More than 3,200 studies or reports have been published on the subject of fluoridation.<sup>93</sup>
- 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.”<sup>94</sup>
- 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.<sup>95</sup>
  - California children missed 874,000 school days in 2007 due to toothaches or other dental problems.20 M&F 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.<sup>96</sup>

- 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.<sup>97</sup>
- 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.<sup>98</sup>
- Decay is more of a problem for low-income people, and fluoridation reduces the disparities in tooth decay rates that exist by race, ethnicity and income.<sup>99</sup>
  - 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>99</sup>
- Tooth decay is a health problem throughout the lifespan. Nearly all (96%) 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>100</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%.<sup>56</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>53</sup>
- Fluoridation remains critically important. Tooth decay is widespread, affecting more than 90% of Americans by the time they reach their adult years.<sup>101</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.
  - 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>102</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>103</sup>
  - Fluoridated water is also the most inexpensive way to provide fluoride.

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# COMMONWEALTH of VIRGINIA

Department of Health

WEST PIEDMONT HEALTH DISTRICT

P.O. BOX 1032, MARTINSVILLE, VIRGINIA 24114-1032  
(276) 638-2311

TO: The Honorable Mayor and Members of Martinsville City Council

Leon E. Towarnicki, City Manager  
City of Martinsville

FROM: J. Henry Hershey, MD, MPH, PhD  
Director, West Piedmont Health District

DATE: July 9, 2015

Re: Community Water Fluoridation

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This memo is in response to an e-mail, *Fluoridation: Dangerous & A Waste of Tax Money*, sent to Martinsville City Council members and City Manager on May 29, 2015 by James W. Reeves, PhD (retired Professor of Engineering, Lafayette, LA) regarding concerns about water fluoridation.

Community water fluoridation is a public health measure first endorsed by the Virginia State Board of Health in 1951. With more than 70 years of research and practical experience in the U.S., the scientific evidence consistently reveals that fluoridation of community water supplies is safe and beneficial to the public. In addition to improving health outcomes, fluoridation saves the community money by reducing costs spent on repairing tooth decay and helping to keep our citizens in school and on the job.

Today, more than 95% of Virginians who receive water from a public water supply are consuming water with fluoride that has been adjusted to the optimal level. Community water fluoridation remains the most cost-effective means of reducing tooth decay and can result in up to a 60% reduction in dental disease in children and a 35% reduction in adults.<sup>1</sup> Fluoridation also plays a key role in helping to reduce tooth loss among adults by at least 40%.<sup>2</sup> A 2013 study showed that adults who were born before fluoridation became widespread, but who resided in fluoridated areas for at least three-quarters of their lives, had a 30% less decay than those who resided in fluoridated communities for less than one-quarter of their lives.<sup>3</sup> Even in an era with widespread availability of fluoride from other sources, such as fluoride toothpaste, recent studies prove that water fluoridation continues to be effective for both children and adults in reducing tooth decay by 25% or more over a lifetime.<sup>4</sup> New studies indicate optimally fluoridated water also prevents decay of root surfaces in the elderly.

Water fluoridation benefits everyone regardless of age, income level, or insurance status. It has been cited as one of the ten great public health achievements of the 20th century by the Centers for Disease Control and Prevention. Adding fluoride to drinking water is similar to the addition of vitamin D to milk, iodine to table salt, and folic acid to bread and cereals.

Fluoride at optimal levels in drinking water (established by the U.S. Public Health Service) has been proven safe, and it is effective in reducing tooth decay. Fluoridated drinking water for the prevention of tooth decay has been endorsed by numerous medical, dental, and public health organizations. In keeping with the Virginia State Board of Health Chronic Disease Prevention and Control Initiative, the Virginia State Board of Health unanimously voted to reaffirm and expand the "Policy Statement Regarding Water Fluoridation" on July 18, 2008, recommending that:

- All public water systems in Virginia be optimally fluoridated, as community water fluoridation is the most effective public health measure to prevent tooth decay;
- State and local government officials move in the direction of providing this health benefit for those citizens in localities where community fluoridation is not already in place; and
- Localities emphasize and actively promote effective oral health preventive programs to include population-based fluoride programs (including fluoride rinse and varnish), sealant programs, regular clinical dental care, and tobacco use prevention.

On April 27, 1965—following the recommendation of the Patrick-Henry Dental Society—Martinsville City Council voted to begin community water fluoridation as a benefit to residents. In that resolution, the continued importance of educational and scientific research about fluoride was emphasized. Since then, monitoring water fluoridation has become the responsibility of the Office of Drinking Water within the Virginia Department of Health. Office of Drinking Water staff monitor results of daily fluoride sampling and inspect fluoride-feed equipment at least annually. Additionally, the Virginia Department of Health has a Fluoridation Coordinator who is responsible for promoting fluoridation throughout the State. Martinsville Water Resources Department fluoridates the community water at the urging of the State Board of Health and assures water quality by using the best available technologies and practices in drinking water treatment, utilizing only fluoride products that are certified by NSF International to be safe to use in drinking water, and adhering to federal, state, and local regulations. According to their website, Martinsville Water Resources Department has approximately 7,500 metered service connections.

In Virginia, the Office of Drinking Water has the responsibility of enforcing all State and federal drinking water regulations. The main federal law that ensures the quality and safety of Americans' drinking water is the Safe Drinking Water Act (SDWA). Under this law, the U.S. Environmental Protection Agency (EPA) sets standards for drinking water quality and oversees the states, localities, and water suppliers who implement those standards.

The safety of fluoridation of drinking water is guided by federal regulations, comprehensive reviews conducted by expert panels, and individual studies. Some of those reviews and studies have been conducted by:

- National Research Council, U.S.A. (1993, 2006)<sup>5,6</sup>
- World Health Organization (1994, 1996, 2006)<sup>7,8,9</sup>
- Agency for Toxic Substances and Disease Registry, U.S. Public Health Service (2003)<sup>10</sup>
- Institute of Medicine, U.S.A. (1999)<sup>11</sup>
- U.S. Department of Health and Human Services, Public Health Service (1991)<sup>12</sup>

In 2001, the U.S. Task Force on Community Preventive Services (an independent, nonfederal, volunteer body of public health and prevention experts) concluded that the evidence for the effectiveness of fluoridation is strong based on the number and quality of studies that have been done, the magnitude of observed benefits, and the consistency of the findings. From their comprehensive systematic review of scientific literature, the Task Force stated that community water fluoridation is "...strongly recommended" as part of a comprehensive population-based strategy to prevent or control tooth decay in communities and that it is cost-saving (i.e. saves resources and reduces dental caries).<sup>13</sup> In 2013, this Task Force reaffirmed and updated its recommendation for water fluoridation based on strong evidence of effectiveness in reducing tooth decay across populations.<sup>13</sup>

On January 7, 2011, the U.S. Department of Health and Human Services (HHS) and the EPA released a joint statement reaffirming the health benefits of community water fluoridation, while also taking steps to ensure that there are no unsafe fluoride levels. HHS moved away from recommending a range of water fluoridation (of 0.7-1.2 ppm) to a single value of 0.7 ppm, in recognition that there are other sources of fluoride (such as toothpaste and mouthwashes) and that previous regional differences in water consumption had evened out. After the January 7, 2011, statement, HHS accepted comments from stakeholders and the public.<sup>14</sup> Earlier this year, HHS issued a brief that reemphasized its support for water fluoridation and published final guidance to recommend an updated level and optimum single value of fluoride in drinking water of 0.7 ppm.<sup>15</sup> The Office of Drinking Water has also adopted this guidance and communicated the new optimum value to waterworks that adjust fluoride levels in Virginia.

Some of the additional documentation supporting the fluoridation of community water includes:

- Centers for Disease Control and Prevention. Recommendations for Using Fluoride to Prevent and Control Dental Caries in the United States. MMWR, August 17, 2001; 50 (No. RR-14): 1-42. (Guidelines on the use of fluoride.)
- U.S. Department of Health and Human Services. Oral health in America: a report of the Surgeon General. Rockville, MD: U.S. Department of Health and Human Services, National Institute of Dental and Craniofacial Research, National Institutes of Health; 2000. Available at <http://profiles.nlm.nih.gov/ps/retrieve/ResourceMetadata/NNBBJT/>

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Leading health and medical authorities—such as the American Dental Association (ADA), American Academy of Pediatrics (AAP), American Medical Association (AMA) Centers for Disease Control and Prevention (CDC), American Academy of Family Physicians (AAFP), Institute of Medicine (IOM), American Public Health Association (APHA), and National Cancer Institute, National Institute of Dental and Craniofacial Research, and World Health Organization (WHO) to name a few—as well as the past five Surgeons General endorse community water fluoridation and encourage communities to fluoridate their water. The CDC reports that “panels of experts from different health and scientific fields have provided strong evidence that water fluoridation is safe and effective.”<sup>16</sup>

You can access the above mentioned leading health and medical authorities, as well as additional reliable sources, at the following links:

- American Dental Association: <http://www.ada.org/goto/fluoride>
- American Academy of Pediatrics: <http://www.aap.org>
- American Medical Association: <http://www.ama-assn.org/ama>
- Centers for Disease Control and Prevention: <http://www.cdc.gov/fluoridation/index.htm>
- American Academy of Family Physicians: <http://www.aafp.org>
- Institute of Medicine: <http://iom.nationalacademies.org/>
- American Public Health Association: <http://apha.org/>
- National Cancer Institute: <http://www.cancer.gov/>
- National Institute of Dental and Craniofacial Research: <http://www.nidcr.nih.gov/OralHealth/Topics/Fluoride/>
- World Health Organization: <http://www.who.int/en/>
- Campaign for Dental Health: <http://ilikemyteeth.org/>
- Children’s Dental Health Project: <https://www.cdhp.org/>

More than 3,200 studies, research papers, or reports have been published on the subject of fluoride or fluoridation. Few topics have been as thoroughly researched as fluoridation. The overwhelming weight of evidence—plus more than 70 years of experience—supports the safety and effectiveness of this public health practice.

National, state, regional, and local policies regarding community water fluoridation are based on generally accepted scientific knowledge. This body of knowledge is based on the efforts of nationally recognized scientists who have conducted research using the scientific method, have drawn appropriate balanced conclusions based on their research findings, and have published their results in refereed (peer-reviewed) professional journals that are widely held or circulated. **Studies showing the safety and effectiveness of water fluoridation have been confirmed by independent scientific studies conducted by a number of nationally and internationally recognized scientific investigators. While opponents of fluoridation have questioned its safety and effectiveness, none of their charges has ever been substantiated by generally accepted science.**

With the advent of the Information Age, a new type of “pseudo-scientific literature” has developed. The public often sees scientific and technical information quoted in the press, printed in a letter to the editor, or distributed via an Internet Web page. Often the public accepts such information as true simply because it is in print. Yet the information is not always based on research conducted according to the scientific method, and the conclusions drawn from research are not always scientifically justifiable. In the case of

water fluoridation, an abundance of misinformation has been circulated. Therefore, scientific information from all print and electronic sources must be critically reviewed before conclusions can be drawn. Pseudo-scientific literature may peak a reader's interest, but when read as science, it can be misleading.

In summary, there is overwhelming public health practice and science—including several studies in the past decade—substantiating the benefit and safety of adding fluoride to drinking water. Opinions are seldom unanimous on any scientific subject. In fact, there may be no such thing as “final knowledge,” since new information is continuously emerging and being disseminated. As such, the benefit evidence must be continually weighed against risk evidence. Health professionals, decision makers and the public should be cooperating partners in the quest for accountability where decisions are based on proven benefits measured against verified risks.<sup>17</sup>

For your information, I am also attaching the May 29, 2015 e-mail from James W. Reeves, PhD with factual and scientific information that addresses each of his comments.

The health and well-being of our citizens is important. 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. Each of you, as elected officials, makes a wide range of decisions about public health issues—such as policies on water fluoridation. My role as Public Health Director of the West Piedmont Health District is to ensure that you understand fully what the science shows before setting those policies.

I hope that this information is helpful to you.

If you have any questions or concerns, please don't hesitate to call me at 276-638-2311, ext. 111.

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July 13, 2015

Mayor Danny Turner  
Vice Mayor Jennifer Bowles  
55 West Church Street  
Martinsville, Virginia 24112

Dear Mayor Turner and Vice Mayor Bowles:

I write on behalf of the Pew children's dental campaign to share information about water fluoridation as you explore this topic in your community.

Having worked with many lawmakers and experts committed to dental health for children, we welcome the opportunity to provide you with information that we hope will be of use to you in your deliberations. Untreated tooth decay can undermine children's ability to eat, sleep, grow, and learn.<sup>1</sup> A 2011 study found that schoolchildren with oral health problems are more likely to miss class and perform poorly.<sup>2</sup> A 2012 study revealed that teens with toothaches were four times more likely to have a low grade point average than their peers.<sup>3</sup>

Fluoridation benefits people of all ages, including adults.<sup>4</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>5</sup> In fact, the Florida Department of Elder Affairs has noted:

*“Because older Americans are now keeping their teeth longer, fluoride will continue to be even more important for preventing tooth decay in this age group. Older Americans are especially susceptible to tooth decay because of exposed root surfaces and mouth dryness that may result from many of the medications they might be using to treat certain chronic conditions.”<sup>6</sup>*

Fluoridation reduces the incidence of decay by about 25 percent over a person's lifetime.<sup>7</sup> As you may know, fluoride is a mineral that exists naturally in water.<sup>8</sup> Fluoridation is simply the process of adjusting fluoride to the optimal level that prevents tooth decay. Fluoride counteracts tooth decay and strengthens teeth from harmful acids and helps draw calcium and other minerals back into the enamel. Drinking water is an ideal vehicle for fluoride because it offers these benefits without requiring families to spend extra money or change their routine. At a time when many families lack dental insurance, this form of decay prevention is especially crucial.

Even in an era when fluoride toothpaste is widely used, fluoridated water still provides critical, added protection. Research from the past few years demonstrates this benefit:

- Within the past three years, studies in Alaska and New York have demonstrated that fluoridated water helps to protect teeth from decay.<sup>9</sup> The Alaska study revealed that

children living in non-fluoridated areas had a 32 percent higher rate of decayed, missing or filled teeth than kids in fluoridated communities.

- A 2010 Nevada study examined teenagers' oral health and found that living in a non-fluoridated community was one of the top three factors associated with high rates of decay.<sup>10</sup>
- A 1998 study of communities in Illinois and Nebraska found that children in the fluoridated town had a tooth decay rate that was 45 percent lower than the rate among kids in the non-fluoridated communities. This benefit occurred even though the vast majority of children in *all* of these communities were using fluoridated toothpaste.<sup>11</sup>

The American Academy of Pediatrics, the American Dental Association, the Institute of Medicine and many other respected medical and health organizations support fluoridation.<sup>12</sup> The U.S. Centers for Disease Control and Prevention (CDC) has praised water fluoridation as one of “10 great public health achievements of the 20th century.”<sup>13</sup> The American Water Works Association points out that “water providers undergo thorough and extensive training to safely apply fluoride in the amount recommended by the world’s most respected public health authorities.”<sup>14</sup>

Compare these credible, science-based sources with the kinds of assertions that anti-fluoride groups make. For example, some claim that the fluoride added to water is a “toxic” waste by-product, but the evidence does not back them up. First, all fluoride additives are required to meet strict quality and safety standards.<sup>15</sup> Second, PolitiFact—an independent fact-checking service—investigated the “toxic” claim and two other common arguments used by anti-fluoride activists. PolitiFact found that each one of these claims was deceptive.<sup>16</sup>

Many of the studies cited by anti-fluoride groups were conducted in other nations under conditions that do not reflect how water is fluoridated in the United States.

For example, anti-fluoride groups claim that fluoride causes lower IQ scores in children, but many of the studies they cite were from areas in China, Mongolia and Iran in which the *natural* fluoride levels were at least four or five times higher than the level used to fluoridate water in Martinsville. One study included fluoride levels that reached as high as 11.5 milligrams per liter—a concentration that is roughly 10 times higher than the level that is used to fluoridate American communities. In addition, the Harvard researchers who examined these IQ studies found that each of the studies “had deficiencies, in some cases rather serious, which limit the conclusions that can be drawn.”<sup>17</sup> Furthermore, the Harvard researchers publicly distanced themselves from the way that anti-fluoride groups were misrepresenting these IQ studies, noting that the results do not allow one to make any judgment regarding possible risk from fluoridation in the U.S.<sup>18</sup>

As the Centers for Disease Control and Prevention notes, “For many years, panels of experts from different health and scientific fields have provided strong evidence that water fluoridation is safe and effective.”<sup>19</sup> Residents of St. Louis, Denver, Chicago, and many other U.S. cities have

consumed fluoridated water for more than 50 years. If the safety concerns raised by anti-fluoride groups were valid, researchers would likely have seen ample evidence of it by now.

In these tough fiscal times, cities and states are increasingly looking for ways to save money. Research shows that water fluoridation offers perhaps the greatest return-on-investment of any public health strategy. By reducing the need for fillings and tooth extractions, fluoridation saves money for families and taxpayers. Consider these facts:

- For most cities, every \$1 invested in water fluoridation saves \$38 by reducing the need for fillings and other dental treatments.<sup>20</sup>
- A Texas study in 2000 confirmed that the state saved \$24 per child, per year in Medicaid expenditures because of the cavities that were prevented by fluoridated water.<sup>21</sup>
- A 2003 study estimated that Fort Collins, Colorado—which then had a population of nearly 101,000—saved about \$429,000 each year by fluoridating its water.<sup>22</sup> Researchers estimated that in the same year, Colorado saved nearly \$149 million in unnecessary health costs by fluoridating public water supplies: an average savings of roughly \$61 per person.<sup>23</sup>
- By protecting the enamel of teeth, fluoridation makes it less likely that decay will occur and develop into more serious dental problems that drive people to hospital emergency rooms (ERs)—where treatment is expensive and taxpayers shoulder much of this cost. More than 830,000 Americans were treated in ERs during 2009 for preventable dental conditions.<sup>24</sup>

It's important that everyone understand the solid scientific evidence that supports fluoridation. More facts about this public health practice are available at [iLikeMyTeeth.org](http://iLikeMyTeeth.org)—a website supported by a coalition of more than 100 organizations, including Pew and the American Academy of Pediatrics.

If you have any questions or need additional information, please feel free to contact Kristen Mizzi Angelone at 202-540-6636 or [kmizzi@pewtrusts.org](mailto:kmizzi@pewtrusts.org). Thank you very much for your consideration.

Sincerely,

A handwritten signature in black ink, appearing to read "Jane Koppelman", with a long horizontal flourish extending to the right.

Jane Koppelman  
Pew children's dental campaign

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## **Statement in Support of Community Water Fluoridation Virginia Dental Hygienists' Association**

The Virginia Dental Hygienists' Association (VDHA) supports community water fluoridation as a safe and effective public health strategy to prevent tooth decay in children and adults. VDHA policy advocates evidence-based practice modalities, including fluoride therapies, for the prevention of disease for the public that we serve. The American Dental Hygienists' Association supports education of the public and other health professionals regarding the preventive and therapeutic benefits of fluoride.

In Virginia, more than 5.8 million citizens consume water that has been adjusted with fluoride to the optimal level. Optimal level standards are set by the Environmental Protection Agency under the federal Safe Drinking Water Act. The Virginia Board of Health recommends that all public water systems in Virginia be optimally fluoridated. (1)

Fluoride, both systemic and topical, is a well-known preventive strategy to prevent tooth decay. It is shown to prevent the formation of cavities, slow the progression of cavities, and reverse the progression of the initial stages of cavity formation. Fluoridated water provides added protection against tooth decay in children, despite the widespread use of fluoride toothpaste. (2) (3). It is the most effective public health measure to prevent costly tooth decay, resulting in up to a 40% reduction in decay rates.

The most effective way to reduce the gap in tooth decay rates between income groups is water fluoridation. Water fluoridation benefits children and adults regardless of income level or insurance status. (4) Additionally, the cost savings on future dental care are significant. For every \$1 spent on water fluoridation, \$38 is saved in dental treatment costs. (5)

Claims of potential toxicity from fluoridated water have not been supported by studies of scientific merit. (6)

VDHA appreciates the opportunity to comment on this very important topic.

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5. "Cost Savings for Community Water Fluoridation", Centers for Disease Control.
6. "Community Water Fluoridation in the United States", Policy Statement. American Public Health Association, 2008.

The Virginia Dental Hygienists' Association  
<http://vdha.net/>  
You may contact VDHA President for more information  
president@vdha.net or 1-888-734-8342



July 1, 2015

Martinsville City Council  
PO Box 1112  
Martinsville, VA 24062

Dear City Council Members,

As President of the Virginia Dental Hygienists' Association (VDHA), I am writing in support of community water fluoridation. As indicated in the VDHA *Statement in Support of Community Water Fluoridation*, fluoride, both systemic and topical, is a well-known preventive strategy to prevent tooth decay. It is shown to prevent the formation of cavities, slow the progression of cavities, and reverse the progression of the initial stages of cavity formation. Fluoridated water provides added protection against tooth decay in children, despite the widespread use of fluoride toothpaste. It is the most effective public health measure to prevent costly tooth decay, resulting in up to a 40% reduction in decay rates.

The American Dental Hygienists' Association (ADHA) is a supporter of community water fluoridation — the ADHA's Policy Manual states that community water fluoridation is a "safe and effective method for reducing the incidence of dental caries." The president of the ADHA added, "Community water fluoridation serves as an important measure that has been shown to lower the rate of dental caries. It is vital that we continue to utilize water fluoridation to help the public achieve their optimal oral health."

Continued use of community water fluoridation aligns directly with the ADHA's mission to help improve the public's oral and overall health. On behalf of the VDHA, I urge you to continue community water fluoridation in the City of Martinsville.

Sincerely,

Michele McGregor, RDH, BS, M.Ed  
President, Virginia Dental Hygienists' Association